



UNITED STATES AIR FORCE RESEARCH LABORATORY

TASK DIFFICULTY MEASUREMENT BY THE UNITED STATES AIR FORCE OCCUPATIONAL MEASUREMENT PROGRAM

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September 1999

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

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|---|---|--|---|--|--|
| 1. AGENCY USE ONLY (Leave blank) | | 2. REPORT DATE September 1999 | | 3. REPORT TYPE AND DATES COVERED Interim - January 1993 - June 1995 | |
| 4. TITLE AND SUBTITLE Task Difficultly Measurement by the United States Air Force Occupational Measurement Program | | | | 5. FUNDING NUMBERS PE - 62204F PR - 1123 TA - C1 WU - 00 | |
| 6. AUTHOR(S) Lisa A. Boyce R. Bruce Gould | | | | | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) | | | | 8. PERFORMING ORGANIZATION | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Armstrong Laboratory Human Resources Directorate Technical Training Research Division 7909 Lindbergh Dr Brooks AFB, Tx | | | | 10. SPONSORING/MONITORING AL/HR-TR-1996-0151 | |
| 11. SUPPLEMENTARY NOTES Air Force Research Laboratory Technical Monitor: Dr. R. Bruce Gould | | | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited. | | | | 12b. DISTRIBUTION CODE | |
| 13. ABSTRACT (Maximum 200 words) <p>Task difficulty (TD) data, routinely collected by Occupational Survey Program, assist policy makers in establishing minimum aptitude requirements, determining appropriate grade and training requirements, modifying classification structures, and developing promotion tests. Task difficulty is a generic term used to describe measures of task performance and task learning difficulty. Extensive research conducted during the past 30 years indicated that task difficulty should be defined in terms of task learning difficulty to have reliability, clarity, and utility. Research was needed to identify the error resulting from current procedures, as well as to develop collection procedures which emphasize the learning aspect of TD.</p> <p>Data were collected from 103 Air Traffic Control (ATC) Senior Noncommissioned Officers using three task factor booklets: TD, task learning difficulty (TLD), and task performance difficulty (TPD). Efforts to determine the reliability, correlation, and validity of the three measures resulted in few significant differences between the data collection methods. TLD appeared to be more reliable due to respondent's consistency and producing fewer divergent raters. TLD data had the greatest correlation to TPD data, perhaps due to the strong learning and performance relationship of ATC tasks. A task level review supports that each survey method measured its projected aspect of difficulty, however the criteria were inadequate and could not substantiate the observations statistically. While further research is necessary, implementation of a TLD survey format would improve the reliability of task difficulty data collection.</p> | | | | | |
| 14. SUBJECT TERMS Job Analysis CODAP Task Difficulty | | | | 15. NUMBER OF PAGES 111 | |
| | | | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED | 18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED | 19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED | 20. LIMITATION OF ABSTRACT UL | | |

TABLE OF CONTENTS

| | |
|---|-----------|
| INTRODUCTION | 1 |
| JOB ANALYSIS OVERVIEW..... | 2 |
| CODAP 6 | |
| AIR FORCE OCCUPATIONAL MEASUREMENT PROGRAM..... | 7 |
| TASK DIFFICULTY | 8 |
| Utilizations..... | 8 |
| Definitions | 12 |
| Data Collection | 16 |
| Analysis | 19 |
| THE PROBLEM..... | 20 |
| METHOD..... | 22 |
| MATERIALS | 22 |
| SUBJECTS | 22 |
| ANALYSES..... | 23 |
| RESULTS..... | 28 |
| SURVEY RESPONSE | 28 |
| TASK FACTOR RELIABILITY | 29 |
| Hypothesis I: Testing Intrarater Reliability | 29 |
| Interrater Reliability | 32 |
| TASK FACTOR RATINGS | 32 |
| Hypothesis II: Testing for Relationships Between Task Factor | |
| Ratings | 32 |
| Task Factor Rating Distributions | 33 |
| Task Data Comparisons Across Survey Booklet..... | 33 |
| Task Data Comparisons Within Duty Areas..... | 36 |
| TASK FACTORS AND CRITERION MEASURES | 38 |
| Hypothesis III: Testing for Relationships Between Task Factor Ratings and Percent Time | |
| Spent Criteria..... | 38 |
| Hypothesis IV: Testing for Relationships Between Task Factor Ratings and Percent Members | |
| Performing Criteria..... | 38 |
| Hypothesis V: Testing for Relationships Between Task Factor Ratings and Training Emphasis | |
| Criteria..... | 43 |
| DISCUSSION..... | 44 |
| SURVEY RESPONSE | 44 |
| TASK FACTOR RELIABILITY | 44 |
| Intrarater Reliability | 44 |
| Interrater Reliability | 45 |
| RELATIONSHIPS BETWEEN TASK FACTOR RATINGS..... | 46 |
| Task Factor Distributions | 46 |
| Task Data Comparisons Across Survey Booklet..... | 46 |
| Task Data Comparisons Within Duty Areas..... | 48 |
| RELATIONSHIP BETWEEN TASK FACTORS AND CRITERION MEASURES..... | 50 |

| | |
|--|----|
| Relationship with Percent Time Spent Criteria | 50 |
| Relationship with Percent Members Performing Criteria..... | 51 |
| Relationship with Training Emphasis Criteria..... | 51 |
| SUMMARY | 52 |
| REFERENCES | 53 |

APPENDIX A: AFSC 272X0 JOB INVENTORY (JI) BIOGRAPHICAL AND BACKGROUND ITEMS 58

| | |
|---------------------------------------|----|
| JOB INVENTORY BIOGRAPHICAL ITEMS..... | 59 |
| JOB INVENTORY BACKGROUND ITEMS..... | 60 |

APPENDIX B: AFSC 272X0 TASK DIFFICULTY (TD) BOOKLET..... 61

APPENDIX C: AFSC 272X0 TASK LEARNING DIFFICULTY (TLD) BOOKLET65

APPENDIX D: AFSC 272X0 TASK PERFORMANCE DIFFICULTY (TPD) BOOKLET.69

APPENDIX E: EXAMPLE OF DUPLICATE PAGE SETUP 72

APPENDIX F: AFSC 272X0 TASK LIST..... 79

APPENDIX G: HIGH PERCENT TIME SPENT (PTS) TASKS WITH TASK FACTOR RANK ORDERS..... 93

| | |
|---|----|
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS PERSONNEL SPEND THE GREATEST AMOUNT OF TIME PERFORMING BY PAYGRADE..... | 94 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS EXPERIENCED PERSONNEL SPEND THE GREATEST AMOUNT OF TIME PERFORMING..... | 95 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS SENIOR AIR FORCE PERSONNEL (TAFMS) SPEND THE GREATEST AMOUNT OF TIME PERFORMING..... | 96 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS SENIOR CAREER FIELD (TICF) PERSONNEL SPEND THE GREATEST AMOUNT OF TIME PERFORMING..... | 97 |

APPENDIX H: HIGH PERCENT MEMBERS PERFORMING (PMP) TASKS WITH TASK FACTOR RANK ORDERS..... 98

| | |
|--|-----|
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS PERFORMED BY THE GREATEST PERCENTAGE OF PAYGRADE PERSONNEL..... | 99 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS PERFORMED BY THE GREATEST PERCENTAGE OF EXPERIENCED SKILL LEVEL PERSONNEL..... | 100 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS PERFORMED BY THE GREATEST PERCENTAGE OF EXPERIENCED AIR FORCE PERSONNEL (TAFMS) | 101 |
| RANK ORDER OF TASK FACTOR RATINGS FOR 25 TASKS PERFORMED BY THE GREATEST PERCENTAGE OF SENIOR CAREER FIELD (TICF) PERSONNEL | 102 |

**APPENDIX I: RANK ORDER OF FACTOR RATINGS OF TASKS RATED HIGH ON
TRAINING EMPHASIS AND PERFORMED BY GREATER THAN 50
PERCENT OF FIRST JOB PERSONNEL..... 103**

List of Tables

| | |
|--|----|
| TABLE 1. SURVEY RESPONSE RATE | 28 |
| TABLE 2. SKILL LEVEL REPRESENTATION OF JOB INVENTORY SAMPLE | 28 |
| TABLE 3. SURVEY RESPONSE RATE BY CRITICAL GROUPS | 30 |
| TABLE 4. HYPOTHESIS I: DUPLICATE TASK CORRELATIONS WITHIN TASK FACTOR BOOKLETS..... | 31 |
| TABLE 5. DESCRIPTIVE STATISTICS FOR RAW AND STANDARDIZED TASK FACTORS..... | 33 |
| TABLE 6. HYPOTHESIS II: TASK FACTOR CORRELATION MATRIX AND COMPUTED R2 VALUES..... | 34 |
| TABLE 7. DISTRIBUTION OF TASK FACTOR TASKS | 34 |
| TABLE 8. ALL TASK DIFFICULTY TASKS > MEAN + 1 SD | 34 |
| TABLE 9. ALL TASK LEARNING DIFFICULTY TASKS > MEAN + 1 SD | 35 |
| TABLE 10. ALL TASK PERFORMANCE DIFFICULTY TASKS > MEAN + 1 SD | 36 |
| TABLE 11. INTERRATER RELIABILITY OF RAW TASK FACTORS ACROSS DUTY AREAS | 38 |
| TABLE 12. RANK ORDER OF RAW TASK FACTOR MEANS ACROSS DUTY AREAS..... | 38 |
| TABLE 13. TASK FACTOR TASKS > RAW MEAN +1 SD IN EACH DUTY AREA | 39 |
| TABLE 14. HYPOTHESIS III: TASK FACTOR CORRELATION WITH PERCENT TIME SPENT AND COMPUTED R2 VALUES | 41 |
| TABLE 15. HYPOTHESIS IV: TASK FACTOR CORRELATION WITH PERCENT MEMBERS PERFORMING AND COMPUTED R2 VALUES | 42 |
| TABLE 16. HYPOTHESIS IV: TASK FACTOR CORRELATION WITH TRAINING EMPHASIS OF TASKS PERFORMED BY FIRST JOB PERSONNEL AND COMPUTED R2 VALUES | 43 |

List of Figures

| | |
|---|-----------|
| FIGURE 1. PAQ'S 12 JOB DIMENSIONS | 3 |
| FIGURE 2. FJA BEHAVIOR OBSERVATION WORKSHEET | 4 |
| FIGURE 3. USES OF JOB ANALYSIS IN THE USAF | 9 |
| FIGURE 4. COURSE TRAINING DECISION TABLE..... | 13 |
| FIGURE 5. INSTRUCTIONS FOR RATING TASK DIFFICULTY..... | 18 |
| FIGURE 6. TASK DIFFICULTY ANALYSIS..... | 20 |
| FIGURE 7. HYPOTHESES I..... | 24 |
| FIGURE 8. HYPOTHESES II | 25 |
| FIGURE 9. HYPOTHESES III | 26 |
| FIGURE 10. HYPOTHESES IV | 26 |
| FIGURE 11. HYPOTHESES V..... | 27 |

Task Difficulty Measurement by the United States Air Force Occupational Measurement Program¹

INTRODUCTION

One effective method of enhancing the effectiveness and dealing with problems relating to human resource development and management in organizations is, from a psychological point of view, to understand the behaviors of individuals in the organizations. To understand individual behaviors, it is necessary to first know and understand their jobs. Job analysis is a means for providing this understanding.

Job analysis research and application are relatively recent phenomenon in the world of industrial psychology. Extensive research primarily performed by the United States military has resulted in successful job analysis programs in both the military and civilian sectors. The job analysis program operated by the United States Air Force Occupational Measurement Squadron (USAFOMS) is responsible for providing objective data to aid Air Force managers in making important training and personnel management decisions. To accomplish this mission, a wide array of occupational data are collected and analyzed using the Comprehensive Occupational Data Analysis Program (CODAP) (Christal, 1974). One specific task factor, referred to as "task difficulty," has wide acceptance for such diverse purposes as establishing task training priorities and setting aptitude requirements for jobs. However, because of the current procedures used by USAFOMS in collecting task difficulty data, the reliability and validity of the data being collected are in question, making the topic of USAFOMS's task difficulty data a highly controversial issue in the Air Force community.

Task difficulty (TD) is a generic term used to describe measures of task performance difficulty and task learning difficulty. Research indicates that defining task difficulty in terms of task learning difficulty as opposed to task performance difficulty improves the rating reliability of survey respondents (Cragun & McCormick, 1967; Lecznar, 1971; Mead 1970a; Mead 1970b; Mead & Christal, 1970; Weeks, 1984). The current definition of task difficulty as used by USAFOMS in the United States Air Force (USAF) Occupational Surveys is "the amount of time needed to learn to do a task satisfactorily." However, the lack of clear distinct instructions highlighting this definition in the data collection instrument may be impacting the validity of the data being collected. Respondents may not be providing learning difficulty but perhaps performance difficulty or a variation of both. The current research goals are to identify the magnitude and type of error associated with the current method of task difficulty data collection and to develop a technique to minimize errors resulting from the current task difficulty instructions.

¹ Revised version of senior author's thesis (Boyce, 1994) written while a member of the USAF Occupational Measurement Squadron, Randolph AFB, Tx. The second author was the supervising professor.

A discussion of task difficulty, as collected and used by the USAF job analysis program, is presented in the following sections. The discussion begins with an overview of job analysis, is followed by descriptions of CODAP and the Air Force job analysis program, and concludes with discussions of the uses, definitions, and data collection and analysis techniques for the task difficulty measures. The sections are organized to flow from a brief account of job analysis to the specific research necessary to validate USAFOMS' definition of task difficulty and to assess the reliability of information being collected.

Job Analysis Overview

Job Analysis serves as the framework for organizational decisions, work and equipment design, and human-resources management. As defined by Jewell (1985), job analysis is a "procedure by which information about job tasks and requirement is obtained through formal methods of data collection and analysis (p. 247)." The results of this procedure provide information about the job itself (work tasks, equipment used), the outcome of worker activities (products made, services performed), working conditions (organizational structure, work schedule), and human requirements (education/training, physical requirements). The end product of a job analysis is used to help organizations carry out a variety of individual, organizational, and research oriented activities, such as employee development, test validation, job classification, personnel recruiting, selection, placement, and training (Cascio, 1991; Jewell, 1985; McCormick & Ilgen, 1985).

Of the several methods available to analyze a job, structured job analysis questionnaires have evolved as the most systematic technique of collecting quantitative information. Position Analysis Questionnaire (PAQ), Functional Job Analysis (FJA), and task inventories are three of the more popular structured questionnaires. A study conducted by Levine, Ash, Hall, and Sistrunk (1983) evaluated the effectiveness and practicality of seven job analysis methods. Though the study found that job analysis methods are perceived as differentially effective for various purposes, in general, the PAQ, FJA, and task inventory-CODAP received consistently high ratings. The PAQ and FJA consists of worker-oriented work activity items, while the task inventory consists of job-oriented work activity items and hence is also referred to as a job inventory.

The PAQ, developed by McCormick, Jeanneret, and Mecham at Purdue University, consists of 194 job elements in six divisions. The six divisions are information input, mental processes, worker output, relationship with others, job context, and other job characteristics. Individual job elements within each of the six groups are rated on appropriate scales, such as possibility of occurrence, importance to the job, amount of time, extent of use, and applicability (Jewell, 1985; McCormick, Jeanneret, & Mecham, 1972). Results of the questionnaire can be used to develop an overall profile of a job in terms of 12 dimensions. The 12 basic job dimensions are indicated in Figure 1. Rather than describing a job in terms of the 194 elements, a job can be described as high or low on such dimensions as "3," performing clerical related activities, "7," performing routine repetitive activities, and "9,"

The 12 Basic Job Dimensions of the Position Analysis Questionnaire

1. Having decision making/communicating/general responsibilities
2. Operating machines and equipment
3. Performing clerical related activities
4. Performing technical related activities
5. Performing service related activities
6. Working regular day versus other work schedules
7. Performing routine repetitive activities
8. Being aware of work environment
9. Engaging in physical activity
10. Supervising/Coordinating other personnel
11. Public and customer related contacts
12. Working in an unpleasant, hazardous, demanding environment

Figure 1. PAQ's 12 Job Dimensions

engaging in physical activities. The final results can then be compared across different jobs. Despite the PAQ's weaknesses, such as having a relatively high reading level with a blue collar orientation and lack of specific work activity descriptions, it has been used successfully in several work settings in many countries (McCormick & Ilgen, 1985).

The FJA procedure, developed by the United States Training and Employment Service (USTES), attempts to identify exactly what the worker does in the job as well as the results of the worker's behavior (Cascio, 1991; Olson, Fine, Myers, & Jennings, 1981; Schmitt & Fine, 1983). Each job is assigned a code that depicts a broad action that summarizes what the worker does in relation to data, people, or things. As shown in Figure 2, tasks are described on a behavior observation worksheet which consists of four general sections: what, why, how, and worker functions. "What" describes what the worker does and to whom or to what. "Why" describes the purpose of the worker's action and "how" describes the tools, equipment, or work aids used to accomplish the task as well as the nature and source of instructions. "Worker functions" describe the orientation and level of worker activity with data, people, and things. Percentages are used to indicate the relative amount of involvement with these functions. These level and orientation measures can be applied to all tasks, and respectively to all jobs. Therefore, the worker function scales provide a way of comparing all tasks and jobs on a common basis. The results are published by the United States Department of Labor in the Dictionary of Occupational Titles (DOT) which serves as a major job information reference source.

During the mid-1930's, DOT was developed by the US Employment Service (USES) in response to the demand of an expanding public employment service for standardized occupational information to support job placement activities. The first edition, published in 1939, contained approximately 17,500 occupations placed into one of 550 occupational groups. Four editions later, the 1991 revision includes standardized, comprehensive descriptions of job duties and related information for 979 occupational groups covering over 20,000 military and civilian occupations or nearly all jobs in the U.S. economy (Dictionary, 1991).

| Behavior Observation Worksheet for Functional Job Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------|-------------------------------------|--|---------------------------|------------------|------------|--------|------|--------|--------|--------------|----------|----------|--------------|-------------|------------------|-----------|------------|--------------------|-----------|-------------|------------------|-----------|----------|--------------|--------|------------|--------|-----------|----------------|--------|--|---------|----------|--|--------------------|--|
| Position: _____ Duty: _____ Task Statement: _____ | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Data</th> <th style="width: 33%;">People</th> <th style="width: 33%;">Things</th> </tr> </thead> <tbody> <tr> <td>0 Synthesize</td> <td>0 Mentor</td> <td>0 Set up</td> </tr> <tr> <td>1 Coordinate</td> <td>1 Negotiate</td> <td>1 Precision Work</td> </tr> <tr> <td>2 Analyze</td> <td>2 Instruct</td> <td>2 Operate, control</td> </tr> <tr> <td>3 Compile</td> <td>3 Supervise</td> <td>3 Drive, operate</td> </tr> <tr> <td>4 Compute</td> <td>4 Divert</td> <td>4 Manipulate</td> </tr> <tr> <td>5 Copy</td> <td>5 Persuade</td> <td>5 Tend</td> </tr> <tr> <td>6 Compare</td> <td>6 Speak-Signal</td> <td>6 Feed</td> </tr> <tr> <td></td> <td>7 Serve</td> <td>7 Handle</td> </tr> <tr> <td></td> <td>8 Take instruction</td> <td></td> </tr> </tbody> </table> | | | | | Data | People | Things | 0 Synthesize | 0 Mentor | 0 Set up | 1 Coordinate | 1 Negotiate | 1 Precision Work | 2 Analyze | 2 Instruct | 2 Operate, control | 3 Compile | 3 Supervise | 3 Drive, operate | 4 Compute | 4 Divert | 4 Manipulate | 5 Copy | 5 Persuade | 5 Tend | 6 Compare | 6 Speak-Signal | 6 Feed | | 7 Serve | 7 Handle | | 8 Take instruction | |
| Data | People | Things | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 Synthesize | 0 Mentor | 0 Set up | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Coordinate | 1 Negotiate | 1 Precision Work | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Analyze | 2 Instruct | 2 Operate, control | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 Compile | 3 Supervise | 3 Drive, operate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 Compute | 4 Divert | 4 Manipulate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 Copy | 5 Persuade | 5 Tend | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 Compare | 6 Speak-Signal | 6 Feed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 Serve | 7 Handle | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 Take instruction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WHAT | | WHY | HOW | | WORKER FUNCTIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perform s What Action | To Whom or To What | To Produce or Achieve What | Using What Equipmen t or Work Aids | Upon What Instructions | Dat a | Peop le | Things | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 2. FJA Behavior Observation Worksheet

The DOT occupational classification system organizes groups of jobs into occupations based on the interrelationships of job tasks and requirements. Each occupation is defined in a systematic fashion. There are seven parts to each occupational definition: 1) Occupational Code Number, 2) Occupational Title, 3) Industry Designation, 4) Alternate Titles, 5) Body of the Definition which includes a lead statement,

task's element statements, and "may" items; 6) Undefined Related Titles, and 7) Definition Trailer. The occupational code number consists of nine digits. The first three digits identify a particular occupational group. The middle three digits are the FJA Worker Functions ratings of the tasks performed in the occupation. The last three digits serve to differentiate occupations. These full nine digits provide each occupation with a unique code which when used in conjunction with the Handbook of Occupational Keywords and Occupational Outlook Handbook, both issued by Department of Labor, are extremely useful for providing a familiarization with the vast array of jobs and terminology associated with each job, for identifying activities and trade requirements of jobs, and for identifying transfer and promotional patterns within particular occupational specialties (Cascio, 1991; Dictionary, 1991).

Task or job inventories typically consist of lists of tasks pertinent to specific occupational areas. In completing an inventory for any given position within an occupational area, a job incumbent or knowledgeable subject matter expert (SME) checks or rates each task according to its application or relationship to the position. The rating may be in accordance with any of several possible rating factors, such as time spent performing the task, judged importance or significance, judged performance difficulty, criticality for training, or the estimated time required to learn to perform. Because the data for individual jobs are expressed in quantitative terms, the results can be subjected to computerized statistical analyses. The Comprehensive Occupational Data Analysis Program (CODAP), for example, is a set of computer programs used to automate, process, organize, and report occupational data. The Levine et al., 1983 study consistently ranked CODAP highly as an effective and practical job analysis method. The specific organizational purposes for which CODAP received high ratings were: job description, job classification, job evaluation, job design, worker training, worker mobility, efficiency/safety, manpower/workforce planning, and legal/quasilegal requirements. CODAP was rated most practical in terms of occupational versatility/suitability, standardization, respondent/user acceptability, operational, reliability, and quality of outcome.

CODAP can be used to group together jobs that have similar tasks or task combinations, resulting in job families that can be used for a number of purposes. Government agencies and large industrial firms have used job inventories-CODAP extensively to develop training programs and performance criteria, as well as validate employee selection programs, job classifications, job descriptions, and job evaluations (Cascio, 1991). The ability to accurately define the composition and content of existing jobs in the United States Air Force is, as stated by Carpenter, Giorgia, and McFarland (1975), a vital prerequisite to the effective operation of the Air Force personnel management system. CODAP provides this capability to the Air Force and her sister services. In addition to being the job analysis standard for the United States and many foreign military services, several universities, industrial organizations, and non-profit organizations have collected occupational data using job inventories and have accomplished their analysis using the CODAP system (Christal, 1974).

CODAP

The most extensive job analysis programs were developed and are operated by governmental agencies. While operational and legal requirements have fostered extensive growth of utilization of job analysis in industry, most of the larger job analysis research and development programs still reside within the government. The Air Force research into the occupational analysis field began in 1956 impacting the growing field of industrial psychology. Specifically, this research led to the development of the Comprehensive Occupational Analysis Program (CODAP). Today, the CODAP system continues to be updated and enhanced by the USAF Armstrong Laboratory (Phalen, Mitchell, & Hand, 1992). Currently available are CODAP programs which can organize and analyze occupational data to answer most of the conceivable questions posed by managers of a personnel system. It is primarily for this reason that all military services in the United States, many allied military services, as well as a number of other government agencies, academic institutions, and some private industries, use CODAP in human resource management (Page & Van De Voort cited in Cascio, 1991; Christal, 1974; Mitchell, 1984).

The evolution of CODAP began with the original version of CODAP simply reporting the time-ranked job descriptions for a specified group of individuals. The second version introduced hierarchical clustering which aided in identifying those types of jobs which actually existed as opposed to those traditionally thought to exist. This technique provides valuable feedback to management of large or geographically separated organizations.

The next major advance in CODAP technology was incorporation of a method of integrating the priorities of supervisors. These priority levels dealt with occupational factors, such as training time to reach proficiency, consequences of inadequate performance, or the criticality of immediate performance. By collecting these ratings from supervisors and processing them with CODAP's interrater reliability program to remove noncooperative raters, a prioritized list can be produced which represents the opinion of supervisors surveyed. Another major advance was the ability to recategorize and summarize the task-level information into higher-level modules more meaningful to managers. Application of this technology has resulted in improved curriculum design and validation.

One of the more recent advances to the system is called profile analysis. This enhancement permits the hierarchical clustering of people or jobs based upon data items of interest. Potential applications include studies of job satisfaction profiles across jobs, clustering jobs to identify job-related requirements, clustering supervisors to determine if different priority policies are at work, and clustering tasks into efficient jobs, jobs into efficient specialties, and specialties into efficient career fields during job description activities (Driskill, 1992; Gould, Archer, Filer, Short, & Kavanagh, 1989; Weber, 1991; Weismuller & Thew, 1979).

CODAP is a dynamic system. It contains over 100 computer programs with the capability of running on several computer systems including Sperry, CDC, and IBM compatible computer equipment. The current package has the ability of processing

20,000 cases of 3,000 task ratings and 8,000 characters of background information per case (Weber, 1991). CODAP technology has made it possible to study jobs on the scale necessary to work with the most critical aspects of Air Force career fields.

Air Force Occupational Measurement Program

The first Air Force operational occupational analysis effort, the Job Specialty Survey Division, was formed in 1967 to apply CODAP technology. Later in 1972, the organization now called the United States Air Force Occupational Measurement Squadron (USAFOMS) was formed at Lackland AFB, Texas. USAFOMS and its occupational analysis program relocated to its current location at Randolph AFB, Texas in 1978.

USAFOMS is the office of primary responsibility for conducting job analysis for Air Force jobs worldwide. The occupational survey process is done in five phases. Phase one is development of the job survey instrument called the USAF Job Inventory. Inventory developers interview subject matter experts to determine the tasks performed in an Air Force Specialty (AFS). From these interviews a comprehensive listing is obtained of all tasks that may be performed by career ladder or job incumbents. This task listing, along with pertinent background questions (job title, equipment operated or maintained, training, etc.) is then published as a USAF Job Inventory. The second phase consists of administering the USAF job inventory to eligible job incumbents to collect "percent members performing," "percent time spent," and "task factor" data. Task factor data, including Task Difficulty (TD) ratings and Training Emphasis (TE) ratings, are collected from experienced senior-level technicians. In phase three, the completed booklets are reviewed and quality controlled to ensure adequate and quality data are being collected. The returned inventories are optically scanned or key-punched by data processing personnel into the computer. In the fourth phase, data are analyzed using a series of CODAP programs and the results are reported in Occupational Survey Reports (OSRs) which summarize findings and implications on enlisted classification, training, and personnel decisions. In phase five, USAFOMS publishes and provides OSRs and related data packages to interested Air Force agencies.

The airman analysis program routinely surveys all Air Force Specialities (AFSs) an average of every five years. With over 250 specialties, approximately 25 specialties or over 70,000 airmen are surveyed each year with results published as Occupational survey reports (OSRs). A typical survey booklet contains roughly between 12 and 20 duties and approximately 500 to 800 tasks (Dubois, 1992). Background items vary among AFS surveys depending on relevant issues effecting the particular specialty. However 12 standard questions are usually always included. These items request such information as paygrade, major command, organizational level, total active military service, time in job, and job satisfaction.

Task inventories satisfy the requirements for a flexible, economical, reliable, and valid procedure for systematically collecting and organizing information for Air Force jobs (Morsh, Madden, & Christal, 1961). Such job analysis information serves as the basis for modification of the existing classification structure and personnel selection techniques, measurement of job difficulty and incumbent performance, and forms the necessary input

for the determination of appropriate job reengineering actions, as well as identification of training requirements, setting of aptitude standards, and job satisfaction research (Carpenter et al., 1975; Christal, 1974).

Task difficulty is a task factor routinely collected by the USAFOMS's occupational measurement program. It plays an integral role in planning for many of Air Force's programs, such as in developing reassignment systems, designing training programs, determining aptitude requirements, and determining grade requirements for positions. Task difficulty's extensive use, despite its relatively recent development, has made it a critical component of Air Force operational and research programs.

Task Difficulty

Utilizations

The information derived from job analysis is fundamental to management information and may be regarded as the keystone of the personnel system of the Air force (Morsh et al., 1961). Possible uses for job analysis results in the USAF are listed in Figure 3. As Morsh et al. described, such information is essential in the measurement of job proficiency, in selection and classification, in development of training curricula, in organizational restructuring, and in improvement of the work environment and job satisfaction.

Task difficulty represents a relatively small but critical portion of job analysis in the Air Force. Mead (1970) proposed several uses of task difficulty data. Following is a list of possible task difficulty applications.

1. Assist in establishing minimum aptitude requirements for positions and classes of positions
2. Compare the difficulty level of work assigned to individuals at various aptitude levels
3. Develop reassignment systems that would insure individuals are assigned jobs of increasing difficulty and responsibility as they progress in their career ladders
4. Determine appropriate grade requirements for positions
5. Compare the difficulty level of work assigned to technical school graduates, individuals bypassing technical school, and individuals receiving Direct Duty Assignments (DDA).
6. Guide decisions about modifications in classification structure.
7. Investigate the interaction between job difficulty, job satisfaction, utilization, and career decisions.

Uses of Job Analysis in the United States Air Force

1. To identify and organize job content for writing and revising standardized specialty descriptions.
2. To establish objective information for job evaluation and to guide or support decisions concerning grade levels, promotion, upgrading, transfer, on-the-job or cross training, or reorganization of work units.
3. To determine job differences and job relationships to be used in structuring and organizing existing Air Force jobs into specialties, officer utilization fields, and airman career fields.
4. To identify the essential features of jobs for the inference of skills, knowledges, and other personal attributes requisite for current Air Force jobs and specialties or for projecting requirements of new tasks, jobs, or specialties.
5. To provide detailed information about current specialties which can be used to identify changes in personnel requirements resulting from the installation of new equipment, tools, or methods of work.
6. To contribute to efficient utilization of individuals and effective career planning and to the projection of the future manpower requirements of the Air Force.
7. To provide essential data to be used in the development of job training standards, course training standards, or for the revision of training curricula.
8. To provide a basis for validating Qualitative Personnel Requirements Information procedures.
9. To improve the matching of men with jobs which will aid in the development of more effective selection and classification devices.
10. To supply current information for the construction of proficiency tests and establishment of work performance standards by determining time required, methods used in performing designated units of work, and other pertinent data.
11. To support work simplification and organizational analysis programs designed to improve work methods, procedures, or equipment furthering efficiency of individual units.
12. To isolate factors which induce job satisfaction, raise morale, or bring about increased effectiveness of individual effort.
13. To locate health and accident hazards and to suggest safety precautions.

Figure 3. Uses of job analysis in the USAF

Several research projects have incorporated task difficulty data. These projects are based on the assumption that task difficulty is based on task learning difficulty. For example in 1972 and 1973, Fugill successfully hypothesized relative task aptitude (level of aptitude required to ensure satisfactory performance of a given task) is conceptually inseparable from relative task difficulty when difficulty is defined in terms of learning time. In the early 1980's, the Air Force Human Resources Laboratory (AFHRL) developed a method to determine minimum aptitude standards for USAF career specialties based on task difficulty and task aptitude benchmarked rating scales. These scales provide a common reference in which to compare tasks from different AFS aptitude areas (Burtch, Lipscomb, & Wissman, 1981; Ramadge, 1987).

An individual's cognitive aptitude for entry and assignment into the Air Force is measured by the Armed Services Vocational Aptitude Battery (ASVAB). Composites of ASVAB subtests are used to establish a person's aptitude for mechanical, administrative, general, and electronics (MAGE) occupational areas and percentile scores are identified for qualification into a specialty job (Ramadge, 1987). The USAF Airmen Classification Structure classifies each specialty by cognitive aptitude area or MAGE type, and a minimum aptitude requirement is assigned to each AFS. Occupational aptitude requirements are critical parameters in personnel procurement, training, utilization, and job attitudes. Prior to this research effort (Burtch, Lipscomb, & Wissman, 1981; Ramadge, 1987), determination of appropriate minimum aptitude requirements for AF specialties was primarily a function of recruiting and training objectives and was established and modified subjectively and unsystematically (Christal, 1974; Fugill, 1972; Weeks, 1984). The minimum aptitude requirement for entry into an AFS is now established by the Air Force Military Personnel Center (AFMPC) using task factor data and CODAP methodologies developed by the AFHRL.

AFHRL's systematic procedure for inferring relative aptitude requirements is referred to as occupational learning difficulty (OLD). OLD is defined as the amount of time it takes to learn an occupation satisfactorily. Three types of occupational information is employed in deriving OLD. Two of the components are task difficulty ratings and task time spent ratings as collected from USAFOMS. The third element involves benchmark rating scales which are designed to capture the range of learning difficulty characteristics of all tasks in an occupational aptitude area (Davis, 1989; Weeks, 1981, 1984). Benchmark ratings of task learning difficulty based on task-anchored benchmark rating scales are comparable across occupations. An OLD index computed by cross multiplying resulting benchmark values by the corresponding percent time spent value yields an average task difficulty per unit time spent (ATDPUTS) index, which are then aggregated across all tasks in the occupation. Thereby, the most difficult AF specialties should have the highest minimum aptitude requirement. Results of these research efforts indicated that aptitude minimums for some specialties were seriously misaligned (Weeks, 1981, 1984). Thus OLD provided the frame of reference for determining aptitude minimums. While previous research conducted by Mumford, Weeks, Harding, and Fleishman (1987) provided evidence of OLD's construct validity, further research into assessing OLD's construct validity is currently in progress (Dickenson, 1991).

Another series of studies integrating task difficulty data relates to automated test outlines (ATOs) developed for AF specialty knowledge test (SKT) construction. In the Air

Force, promotion to the E-5 through E-7 enlisted paygrades in most specialties is determined by an airman's relative ranking in the Weighted Airman Promotion System (WAPS). One of the most critical factors in determining promotion success is SKT scores, a component of WAPS. The SKT is a 100-item multiple choice test designed to measure job knowledge of an AFS. The USAFOMS Test Development Flight (USAFOMS/OMD) is responsible for development of SKTs (Longmire, Phalen, Weismuller & Dittmar, 1988). Although USAFOMS/OMD has maintained a successful test development program since the 1950's, continuing efforts to improve and enhance testing procedures led to a large-scale research effort to develop and validate a methodology for producing occupational data based outlines for SKTs (Phalen, Dittmar, & Weismuller, 1989).

The first step in the ATO process is to predict a subset of USAF Job Inventory tasks which has the highest relevance for testing purposes. A standard weighted regression equation which considers percent members performing, percent time spent, training emphasis, and task difficulty values for each task generates a predicted testing importance (PTI) value for E-5 and E-6/7 tasks. These subsets of tasks are administered to an average of 50 to 70 noncommissioned officers (NCOs) who rate each task on its specialty knowledge testing importance. The resulting field inputs are processed, analyzed, and subsequently used to determine testing importance weight for each task and to calculate test outline weights for each major area (Weismuller, Dittmar, & Phalen, 1988). Efforts to evaluate the ATO process examined the reliability and validity of the primary components using field validated testing importance (FVTI). Task difficulty data exhibited a stronger relationship with FVTI at an E-6/7 level than an E-5 level. This relationship would be expected if task difficulty is assumed to be an estimate of how difficult it is to learn to perform a task and senior experienced personnel perform those tasks which are more difficult to learn (Weismuller et al., 1988). Further research by Dittmar, Weismuller, Haynes, & Phalen (1989) indicated that the development of AFS specific PTI equations might improve predictor efficiency. While research continues, USAFOMS/OMD has successfully implemented the ATO process with SKT development teams and test psychologists showing increasing acceptance of the procedures and products (Phalen, Laskowski, & Williams, 1989).

A final example of research projects, applications, and impact of task difficulty data in the operational Air Force is the development of Automated Training Indicators (ATI). AF Regulation 8-13 requires specialty training standards (STSs) be used to document training requirements for each specialty in terms of tasks required in the specialty and the knowledge and proficiency required to perform the tasks. This document helps standardize on-the-job training (OJT), as well as highlights formal training needed as individuals progress through their career. A course training decision table provides guidance for training decisions, such as development of STSs and other course documents. The table assists training personnel in determining what training is needed and to what depth it should be taught (Fodale & Aslett, 1987). As shown in Figure 4, the course training decision table contains five columns. The first column references the criterion group and percent members performing a given task. The second column addresses TE ratings and the third column addresses TD ratings. High TD ratings suggest tasks which are difficult to learn to perform warrant consideration for centralized training. Tasks rated low in difficulty are considered simple to learn to

perform and are recommended for OJT with no centralized training unless TE ratings or percent members performing data were high. The fourth column examines safety or critical issues. The fifth column provides the resultant training decision. While training development personnel realized the utility of the data, this tabular method was considered to be labor intensive. The need for a better, more organized, and faster approach was in demand (Fodale, 1988).

Development of an automated version of the decision logic table resulted in ATI. ATI are CODAP processed numeric values derived from comparisons of percent members performing, TE, and TD ratings for a given AFS similar to the logic of the course training decision table. An ATI value of one through 18 categorizes the task into a type of training ranging from "1" train by OJT with no centralized training to "18" centralize training with task knowledge and performance base. ATI was field tested by USAFOMS analysts and training personnel with favorable results. Use of ATI is now standard policy in USAFOMS' occupational analysis program (Fodale, 1988; Fodale & Aslett, 1987).

The Air Force, as all of the Department of Defense, is undergoing a significant drawdown. The new world environment and national priorities have dictated a reduction in military manpower (Boles, 1992). As the numbers of persons entering the Air Force decrease and complexity and scope of the jobs increase, it becomes exceedingly necessary to make optimal use of whatever manpower is available. Task difficulty serves as an important tool to improve airman's career planning, the assignment system, job grade requirements, and analysis of work. Task difficulty data provide information about the learning burden of tasks that make up Air Force jobs and the ability needed by airmen who perform those tasks. For personnel research, the data are useful in studying the relationship between job satisfaction, reenlistment intent, and utilization of airmen's talents and training.

Definitions

Task difficulty has been defined as "the amount of time needed to learn to do a task satisfactorily." This definition, as well as task difficulty data collection and analysis techniques, is the result of a lengthy stream of research dating back to 1960 (Tartell, 1990). As a result, it is promoted by the Occupational Measurement Program and is the basis of many policies and practices of the USAF, such as those described in the above section.

| AUTOMATED TRAINING INDICATOR (ATI) TABLE | | | | |
|---|---------------------------|-------------------------|------------------------------------|-----|
| Percent Members Performing | Training Emphasis Ratings | Task Difficulty Ratings | Additional Task Factors | ATI |
| 49.5 to 100 | High | 3.0 to 9.0 | ----- | 18 |
| 49.5 to 100 | Above Average | 0 to 2.99 | Documented Critical or Safety Item | 13 |
| 49.5 to 100 | Mean or Below | 3.0 to 9.0 | ----- | 17 |
| | | 0 to 2.99 | ----- | 8 |
| | | 3.0 to 9.0 | Determine why TE is low | 16 |
| | | 0 to 2.99 | ----- | 6 |
| 29.5 to 49.4 | High | 3.0 to 9.0 | Documented Critical or Safety Item | 12 |
| 29.5 to 49.4 | Above Average | 0 to 2.99 | Documented Critical or Safety Item | 10 |
| 29.5 to 49.4 | Mean or Below | 3.0 to 9.0 | ----- | 15 |
| | | 0 to 2.99 | ----- | 5 |
| | | 3.0 to 9.0 | Determine why TE is low | 14 |
| | | 0 to 2.99 | ----- | 4 |
| 0 to 29.4 | High | 3.0 to 9.0 | Documented Critical or Safety Item | 11 |
| 0 to 29.4 | Above Average | 0 to 2.99 | Documented Critical or Safety Item | 9 |
| 0 to 29.4 | Mean or Below | 3.0 to 9.0 | ----- | 7 |
| | | 0 to 2.99 | ----- | 3 |
| | | 3.0 to 9.0 | ----- | 2 |
| | | 0 to 2.99 | ----- | 1 |
| <p>High = 1 Standard Deviation or more above the mean Above Average = Mean to 1 Standard Deviation above the mean</p> <p>18 = Task Knowledge and Performance 17 = Task Knowledge and Performance 16 = Task Knowledge and Performance (unless otherwise justified) 15 = Task Knowledge 14 = Task Knowledge (unless otherwise justified) 13 = Task Knowledge and Performance if critical or safety item; if not ATI 15 if $TD \geq 3.0$ ATI 8 if $TD < 3.0$ 12 = Task Knowledge and Performance if critical or safety item; if not ATI 15 if $TD \geq 3.0$ ATI 8 if $TD < 3.0$ 11 = Task Knowledge and Performance if critical or safety item; otherwise OJT 10 = Task Knowledge if critical or safety item, otherwise OJT 9 = Task Knowledge if critical or safety item, otherwise OJT 8 = Train by OJT 1-7= No Centralized Training</p> | | | | |

Figure 4. Course Training Decision Table

Task difficulty is a complicated concept and defining it is not a simple matter (Christal, 1974; Madden, 1960). A task may be characterized as difficult because it involves one or more of the following conditions (Madden, 1962).

1. The incumbent was not properly trained to perform the task and this training is not available on the job.
2. Performance standards do not exist or are not clearly defined.
3. Proper tools and equipment are not available or are hard to obtain.
4. The task has emotional aspects which are unpleasant to the incumbent.
5. There is some attribute of the task itself which makes it difficult. It may require intense concentration or vigorous physical exertion.
6. There is some attribute of the environment in which the task is performed which makes it difficult. There may be excessive noise or a requirement for extensive cooperation with other workers.
7. The incumbent does not have the ability to perform the task easily even though other workers generally consider it an easy task.

Difficulty as a task attribute may be defined in as many ways. For instance, the definition may be in terms of the amount of training or experience required to perform a task; it may refer to mental or physical effort; or difficulty may mean complexity or monotony, or something else.

It appears that defining difficulty has presented a general problem of critical significance. One approach to dimensionality of difficulty is to ask incumbents to describe specific tasks that are difficult and then to explain why they are difficult. This method was used in a preliminary study conducted by Madden (1960, 1962). Madden found that when incumbents were asked to list tasks which they found difficult to perform or to learn and to state the reasons why they were difficult, reasons given could be classified into 10 separate categories. Following are the ten categories which resulted:

1. training
2. interpersonal relations
3. frustration
4. pressure
5. attention
6. aptitude
7. working conditions
8. forms
9. regulations, technical publications, manuals
10. unclassified

Examples of reasons tasks were categorized as difficult due to "training" included individuals did not receive any training, did not receive enough training, or changes were occurring so rapidly that training was never completed. The "interpersonal relations" category involved reasons associated with difficulty in receiving or giving supervision, relations with peers, and coordination. The "frustration" category included difficulty reasons relating to lack of proper tools, not enough information, unavailable parts or publications, and waiting. Tasks categorized as "pressure" difficulty included reasons such as insufficient time to do the work properly, responsibility for expensive equipment, or rapid changes that require a great deal of adaptability. "Attention" difficulty type tasks included work that required precision, careful naming or labeling, or was very complicated. Tasks that were considered difficult due to "aptitudes" were a result of individuals lacking the appropriate abilities or skills to complete the task properly. An example might be a draftsman who is unable to draw. Climbing ladders or performing dirty work were examples of the "working conditions" category. "Forms" described the difficulties associated with filling them out, getting information for them, and avoiding errors. Difficulties associated with "regulations, technical publications, and manuals" included finding them, understanding and interpreting them, and conflicting interpretations. Finally, the "unclassified" category encompassed irrelevant statements that were not considered real reasons ("It's hard to do."), reasons which were extremely unusual and unlikely to constitute a component of difficulty having operational implications ("I do not speak English well."), and statements which did not seem to fit into any category in which there were at least one other statement.

Nine of these categories represented different definitions of difficulty, and the majority of them were more related to the work or environmental situation in general than to particular tasks. Basically, the "difficult to perform" reasons were those which could appear in any job and were not produced as a result of any peculiar characteristic of a particular job or task. Similarly, only a few "difficult to learn" reasons could be directly identified as derived from the properties of a task. For instance, insufficient training, interpersonal relations with supervisors and subordinates, frustrating factors (waiting for parts), working conditions, aptitude requirements, and completion of forms constituted a large part of all reasons given. Thus, reported difficulty may stem from environmental conditions, personal characteristics, or some factor inherent in the task itself unless the rating scales explicitly directs the rater's response to a specific domain of difficulty.

One way of using the difficulty attribute is to leave it undefined so the incumbent will identify tasks they judge to be difficult about their jobs, whatever the reason. Although Ammerman (cited in Morsh, Madden, & Christal, 1961), Cragun & McCormick (1967), and Madden (1960, 1962) did this with a small degree of success, difficulty is often perceived differently from task to task by the same individual. For instance, a given incumbent may consider task "A" to be difficult for reason "X," but task "B" may be perceived as difficult for reason "Y." Furthermore, interviews of job incumbents have revealed that the same task may be considered difficult for widely varying and unrelated reasons by different incumbents (Madden, 1960, 1962). Judgements and opinions collected using a global task difficulty concept offers little about the type and rationale behind an individual's rating. This information can be misleading and has minimal value. Defining the dimensions of difficulty clearly and accurately and collecting judgements and

opinions regarding specific components of difficulty provide more meaningful information having a higher utility.

Although many definitions were considered, task difficulty was initially defined in terms of mental difficulty and physical difficulty (McCormick & Tombrink, 1960). As Madden's (1960, 1962) research predicted, the test-retest reliability was relatively low and the inter-rater consistency indicated differences existed among incumbents in their perceptions of the difficulty of the various tasks.

During the late 1960's, the Air Force Occupational Program collected data using "Difficulty of Task Performance" and "Difficulty of Learning the Task" relative rating scales (Fugill, 1972; Morsh & Archer, 1967; Weeks, 1984). However, as initially discovered by Madden (1962), senior-level technicians did not perceive task performance difficulty when defined in terms of the difficulty of performing a task satisfactorily under normal conditions as an independent task property but rather as dependent on physical working conditions, experience, and interpersonal relations. As a result, senior-level technicians did not always agree on the relative difficulty of a given task. The alternative was to consider a definition which reflects the amount of time it takes for individuals to learn to perform a task adequately. Numerous studies demonstrated that senior-level technicians could achieve high levels of agreement when rating task on learning difficulty (Cragun & McCormick, 1967; Lecznar, 1971; Mead 1970a, 1970b; Mead & Christal, 1970). For example, Christal (1974) found that while supervisors could not agree on a time it takes for workers to learn to perform tasks; supervisors could agree that if other factors are held constant, workers can learn to perform some tasks faster or slower than other tasks. Thus, task-learning difficulty was defined as the time it takes to learn to perform a task satisfactorily (i.e., the higher the learning difficulty, the more time required to learn to perform the task). As a result, this definition was adopted for the purpose of obtaining judgments of task difficulty. Weeks' 1981 study further supported this task difficulty definition by concluding that "knowledgeable judges can reach high levels of agreement concerning the relative learning difficulty of work tasks when learning difficulty is defined in terms of learning time." Finally, Burtch et al. (1982), again provided evidence in support of the reliability and validity of task-level ratings of learning difficulty. The USAF's current definition of task difficulty as "the amount of time needed to learn to do a task satisfactorily" is supported by this 20-year stream of research.

Data Collection

The USAF method of collecting, analyzing, and reporting task difficulty is relatively complex. The essential rationale and research evidence upon which the existing USAFOMS method has been based are comprehensively reported by Morsh et al. (1961). Morsh and Archer (1967) set forth detailed procedures for collecting, organizing, analyzing, and reporting information describing Air Force jobs. Although the analysis routines have changed significantly during the past 30 years and still continue to evolve, the data collection procedures have remained very stable (Phalen et al., 1992).

The Air Force occupational analysis program is designed specifically for large scale administration and operational application. The basic data in the identification of tasks come from survey data routinely collected at USAFOMS. Initially, the job inventory

used in the periodic occupational surveys of active duty jobs are developed by creating a duty outline and a listing of task statements based on job descriptions, course training standards, and other published materials. Related tasks are then organized within duty categories and the task list is revised based on work-site observations of the job and input from technical specialists. When finalized, the job inventory (JI) is administered to a representative sample of job incumbents within a specialty to collect information about the relative amount of work-time spent on tasks which they perform, using a 9-point scale with descriptive bench marks ranging from "a very small amount" to "a very large amount." Specifically, job incumbents are asked to check the tasks they perform in their present job and then rate those tasks in terms of the relative amount of time spent on that task. Relative time spent means the total time spent doing the task compared with time spent on each of the other tasks performed in the present job. These data are compiled in a computer-generated job description to provide, among other information, an estimation of the percentage of incumbents who perform each task and the average percentage of time spent on each task by those in the specialty who perform it. This same information can be reported for any group of individuals who can be defined by available background variables such as Total Active Federal Military Service (TAFMS), grade, education, and time-in-job. The first two sections of a job inventory, a biographical section and a background section, are used to collect general information about the job incumbent and their job. A representative example of items collected in the biographical and background information data collection sections is located in Appendix A.

The same duty/task list is administered to approximately 75 senior NCOs, usually supervisors, who are asked to rate the tasks on training emphasis (TE), based on how much structured training is required for first-term personnel. Structured training includes training such as basic resident training, formal OJT, and first-term career development courses. TE raters first check tasks requiring structured training and then they recommend the amount of first-term training emphasis needed based on a 9-point scale ranging from "1" indicating extremely low training emphasis to "9" indicating extremely high training emphasis. TE data are important for the determination of initial skills training requirements by aiding decisions about which job tasks should be trained and to what degree.

Another 75 senior NCOs are asked to rate the same duty/task list on task difficulty, based on how much time is required to learn the tasks. The instructions for completing the task difficulty inventories are located in Figure 5. TD raters are asked to first develop a frame of reference for rating task difficulty by scanning the entire list of tasks. Then they are requested to estimate the task difficulty ratings for each task compared with other tasks in the inventory on a 9-point scale ranging from "1" indicating extremely low difficulty to "9" indicating extremely high difficulty. These ratings are used to compute an estimate of the task difficulty of each task compared with other tasks in the inventory. Christal (1974), Mead and Christal (1970), Ruck, Thompson, and Stacy (1987), and Ruck, Thompson, and Thompson (1978) determined task factor values could be reliably obtained from as few as 20 to 40 raters. However, USAFOMS historical records indicate approximately only 60 percent of task factor booklets are returned from a general administration. Accordingly, task difficulty is typically administered to 75 raters.

INSTRUCTIONS FOR RATING TASK DIFFICULTY

As a senior technician, you have been selected to provide needed information pertaining to the difficulty of tasks performed in your career ladder. This information will be of value to the Air Force in the improvement of training, classification, and testing programs. To accomplish this rating, follow the procedure listed below.

NOTE: To obtain the maximum response possible, it is requested that you rate each task of which you have any knowledge. Rate those tasks you presently perform or supervise, those tasks which you have performed at a prior time in your career, and those tasks which you have observed or supervised while being performed by others. Most personnel with your experience and background will be able to rate the majority of the tasks listed and in many cases to rate all of them.

STEP 1. Develop a frame of reference for rating task difficulty. For this survey, task difficulty is defined as the amount of time needed to learn to do each task satisfactorily. To develop a frame of reference, scan the entire listing of tasks. Pick out some easy tasks and some difficult tasks. Then, find some tasks which fall between these extremes that are of average difficulty. Use these tasks at or near the middle of the range as a reference point for judging the difficulty of all tasks in the inventory. This frame of reference will be used for completing STEP 2.

STEP 2. Estimate the task difficulty rating for each task compared with other tasks in this inventory. Use the scale shown here and at the top of each page to rate each task.

1. Extremely Low
2. Very Low
3. Low
4. Below Average
5. Average
6. Above Average
7. High
8. Very High
9. Extremely High

Begin with the first task in the booklet and give each task of which you have knowledge a difficulty rating from 1 to 9; record the value opposite the task statement in the column titled "TASK DIFFICULTY." Try to rate every task on each page. Remember (from STEP 1) that you are comparing each task with the other tasks in the career field.

STEP 3. The last page of the booklet is available to add any tasks you do now which are not listed. Your constructive suggestions in improving the job inventory will be useful.

STEP 4. Review the booklet to see that you have rated the DIFFICULTY of all tasks possible. Each task can be given only one rating.

Figure 5. Instructions for Rating Task Difficulty

Analysis

These data, once collected, are then analyzed using the Comprehensive Occupational Data Analysis Program. The CODAP programs serve as the basic analytical technique for presenting a job analyst with readily interpretable information on the content of Air Force jobs and specialties. However, the validity of these program's products obviously assume and require accurate input data. To the extent that a subject matter expert cannot provide specific reliable information concerning the correct type of difficulty, errors may occur in the resulting recommendations.

One means of minimizing the effects of inaccurate data is through a CODAP program which identifies and removes divergent raters. A divergent rater is one whose rating behavior demonstrates that the rater did not take the task seriously or one who unintentionally rated improperly, such as one who reverses the meaning of the rating scale. Once divergent raters are identified, they are examined to determine if there are any systematic similarities among them. Similarities may suggest the presence of multiple policies in the AFS. The reliability of a single rater is viewed for the expected correlation between that randomly chosen rater from a sample and another rater randomly chosen from the same sample. The reliability of a composite of raters is the expected correlation between the mean task value for a set of raters drawn from the sample and the average task means of an equivalent set of raters drawn at random from the population of raters from which the sample of raters was drawn. The CODAP GRPREL program tells how many raters of the same type in the sample would be needed to achieve a reliability of a composite of raters that would equal .90. Therefore, when reliability of a composite of raters equals or exceeds .90, it is determined there exists high interrater reliability among raters (Christal & Weismuller, 1976; Goody, 1976).

Another means of minimizing the effects of poor data involves a quality review of incoming data. Specifically the occupational analysts from the Airman Analysis Branch (USAFOMS/OMYO) are responsible for reviewing at a minimum 10 percent of all returned job inventories and 100 percent of all task factor booklets. This quality control procedure is one method of ensuring job incumbents are following instructions for filling out the booklets and that the data look realistic.

The occupational analysts are also responsible for analyzing and making recommendations based on occupational survey data for the enlisted career ladders. Of primary interest, The "1990 OMYO Self-Inspection Checklist" located in the *USAFOMS/OMYO Occupational Analyst Handbook* (1990) and recreated in Figure 6, instructs analysts to "Analyze task difficulty data." Section 4 of the Handbook, "Procedural guide for writing OSRs for Enlisted AFSCs," contains the guidelines for reviewing task difficulty (TD) data when writing the related portions of the OSR. These guidelines provide three questions to be asked by the analyst about tasks with high task difficulty ratings: What are the tasks?; Who performs the tasks?; and Is there a trend?.

The Procedural Guide for Writing OSRs for Enlisted AFSCs:
TD Survey Data

"Objectives: To be able to provide valuable information for decision-makers regarding training decision, we must first gather data that are reliable and analyzable. To this end, we collect secondary task factor data in the form of task difficulty and training emphasis. Each of these collection instruments provide very specific and definitive kinds of data. For example, task difficulty is a measure of how long it takes to learn how to do a particular task.

"Analysis Procedures: The primary purpose of this analysis is to provide information to technical training center personnel which may be used to review and update current training programs. With this in mind, the analyst should leave no stone unturned in his/her search for answers that will support a sound training policy. It is incumbent upon the analyst to use approved statistical techniques, as well as sound judgement in performing the analysis process, based on the data collected. Once the analyst has percent performing data, task factor data, and properly matched the STS and POI, he/she can then compare that information to all pertinent documents."

For the "Task Difficulty" subsection, the following questions should be addressed:

- 1) What tasks are rated highest in TD?
- 2) Are the highest rated tasks performed by high percentages of first-term airman, 7-skill level personnel, or both?
- 3) Is there a pattern found for tasks rated highest in TD?

Figure 6. Task Difficulty Analysis

The Problem

The utility of a technique to determine the difficulty level of Air Force jobs based on a time to learn definition is not in debate. The basic question is whether the task difficulty data currently collected by USAFOMS is in fact "time it takes to learn to perform a task satisfactorily" or are raters providing different interpretations of task difficulty in their ratings?

As shown in Figure 5, the current instructions provided to the NCOs by USAFOMS for rating task difficulty do not emphasize the "learning" dimensionality of task difficulty. The instructions state the definition only once without bold-face or underlining of the term "learning" to highlight or draw attention to this important distinction. Furthermore, the rating scale defined at the top of each task-rating page states only "task difficulty" (see Appendix B). When task difficulty is used without any qualifiers, individuals may think of performance difficulty or how difficult it is to perform the task. In which case, USAFOMS may be essentially providing instructions which collect task

"performance" difficulty or a "global" difficulty rather than "learning" difficulty ratings. If so, improper guidance may be given to training developers and other policy makers. One consequence might be that classification personnel establishing high aptitude requirements for specialties which have tasks that are very hard to complete or perform but whose technical learning requirements are not difficult. While interrater agreement could be high, it only means that raters agreed on difficulty, not that they rated only learning difficulty. Past research clearly indicates "time to learn" is a valid and reliable means of collecting and understanding task difficulty (Burtch et al., 1982; Christal, 1974; Lecznar, 1971; Mead 1970a, 1970b; Mead & Christal, 1970; Weeks, 1981). The concept of task learning difficulty is key to ensuring proper data are collected from the raters. The users of task difficulty information base decisions with the assumption the data measure the task learning difficulty. There is a strong need to know if task difficulty data currently being collected are actually task learning difficulty, and if not, to identify what was being collected, as well as a possible method to ensure future task learning difficulty instructions are clearly understood and accurately reported by subject matter experts.

If the ratings are not "pure" learning difficulty measures, the required corrective actions might be minimal. Re-titling the cover page as Task Learning Difficulty, highlighting and emphasizing the definition and instructions, and titling the scales located at the top of each page as "Task Learning Difficulty" might be sufficient changes. However, these changes may have a serious impact on validity and reliability of both past and future data (Demetriades, Knoll, & Boyce, 1990). Research is required to demonstrate the relationship between task difficulty data, as collected by USAFOMS, and data which emphasize the learning aspect of difficulty.

Therefore, this study investigated a new data collection procedure which modified the current techniques by using a clearer more concise cover page statement, instructions, and difficulty rating scale headings with the expectations that:

- 1) Significant differences will be identified between different rating methods for the same tasks. Specifically, there will be a significant difference between task learning difficulty and task difficulty/task performance difficulty ratings.
- 2) Task learning difficulty data will have greater rater reliability because of a more focused definition. That is, task learning difficulty will have fewer divergent raters as well as higher intra- and inter-rater reliability than the other two rating procedures.
- 3) Task learning difficulty will appear more valid as a measure of learning difficulty through the specificity of its technique and relationship to other task data, such as percent time spent, time functions (seniority and experience of high grade, longer service time, and greater time in career field), and training emphasis of tasks performed by incumbents in their first jobs.

METHOD

The method used to investigate the reliability and validity of task difficulty data was three-fold and similar to the standard procedures currently used to collect task difficulty data. Three equivalent samples of members in an Air Force Specialty (AFS) were surveyed in a single administration. Each rater received one booklet, either the current task difficulty (TD) survey booklet, a new experimental task learning difficulty (TLD) survey booklet, or an experimental task performance difficulty (TPD) booklet. Training emphasis (TE) booklets and job inventory (JI) surveys were also administered to AFS personnel according to standard USAFOMS procedures. Raters had approximately 3 months to complete their survey booklet. As necessary, follow up telephone interviews with a sample of raters were coordinated to obtain subjective estimates of rating scale differences.

Materials

The Air Traffic Control career ladder was selected as the specialty to be used for this study for three reasons. First, the job inventory was in the final stages of completion at the time of this study's initiation. Second, the population size was large enough for administration of the additional survey booklets; and thirdly, the nature of the Air Traffic Control job was considered suitable for investigating task difficulty with results being generalizable to other AF specialties. The Air Force Specialty Code (AFSC) 272X0 Air Traffic Control career ladder job inventory task list, dated June 1992, was provided to senior NCOs. The Job Inventory was prepared by an inventory developer after carefully reviewing pertinent documents, such as previous task lists and training documents. This task list was refined and validated through personal interviews with 34 subject-matter-experts representing five operational bases. This process resulted in a final job inventory containing 514 tasks organized under 10 duty headings.

Three types of difficulty inventory booklets were constructed. One booklet received a brown cover page with the standard "Task Difficulty" title and contained the current instructions and scale headings (see Appendix B). Another inventory used a pink cover page with the revised title, "Task Learning Difficulty," and revised instruction page and scale headings (see Appendix C). The third inventory used a purple cover page with the revised title, "Task Performance Difficulty," and revised instruction page and scale headings (see Appendix D). All three difficulty booklets contained a duplicate page to assess internal consistency or intra-rater reliability. Page 11 (tasks 229 through 252) was chosen for duplication and was located following page 10 and again following page 13 in each task factor booklet (see Appendix E).

Subjects

All eligible senior noncommissioned officers holding a Duty Air Force Specialty Code (DAFSC) 27270 designation were identified using the Uniform Airman Record (UAR), provided by Brooks Air Force Base (AFB) Armstrong Laboratory. The UAR is maintained by the USAF Military Personnel Center (USAFMPC) at Randolph AFB, Texas. From the 1,307 eligible personnel, three lists of 75 names randomly selected by the

computer were generated. Each selectee received either the brown Task Difficulty (TD) inventory, the pink Task Learning Difficulty (TLD) inventory, or the purple Task Performance Difficulty (TPD) inventory. As standard occupational survey procedure, a list of 75 senior NCOs were also computer selected to receive a blue training emphasis (TE) booklet. The job incumbents receiving task factor booklets equate to 26 percent of the total eligible DAFSC 27270 population. Standard procedure also dictates that if an Air Force specialty has a population of less than 3,000 personnel, all eligible members be surveyed. In situations where the population exceeds 3,000 individuals, the analyst, survey developer, and other key personnel determine an appropriate sampling size. Since 4,683 AFSC 272X0 personnel were identified as eligible to participate in the survey, a 50 percent sampling was considered acceptable based on historical data and previous survey experience. Therefore, 2,248 eligible AFSC 272X0 job incumbents were programmed to receive the standard job inventory. The inventories and task factor booklets were mailed to airmen representing all skill levels and all using major commands (MAJCOMs) at 99 installations worldwide.

Distribution of the inventories to job incumbents was carried out between July and November 1992 using the standard occupational survey arrangements with base Consolidated Base Personnel Offices (CBPOs) hosting the airmen. The Occupational Survey Control Officer (OSCO) located at each CBPO is responsible for receiving survey booklets from USAFOMS, administering the survey to job incumbents, collecting the completed surveys, and forwarding the booklets to USAFOMS.

Analyses

Figures 7 through 11 summarize the primary statistical hypothesis tested. First, intrarater reliability was evaluated using a test/retest scenario. The duplicated pages in each booklet provided the data for part of this analysis. The results of the first administration (or first time page 11 was completed) was predicted to correlate highly with the second administration (or the second time the page was completed) in the three survey booklets (see Figure 7). The object of this effort was to ensure an individual used the same logic in identifying difficult tasks, for at least the same task. Higher intrarater reliability was expected for task learning difficulty ratings and was tested by comparing the correlations of TD duplicated tasks, TLD, and TPD duplicated task correlations. Though, the short time between "testing" may effect the results, it will probably err towards increased correlation due to proximity and temporal effects, i.e. Type II error. Next, interrater agreement was measured. The duplicated page (second page 11) was first removed and then CODAP GRPREL program was used to refine the data by identifying and deleting divergent raters using the technique reported by Goody (1976). Differences in the number of divergent raters were examined with the expectations that task learning difficulty will have fewer divergent raters. After refining the data, the degree of interrater agreement between the raters was measured using the intraclass correlation technique described by Lindquist (1953). Because the tasks are rated relative to each other rather than on an absolute scale, Christal and Weismuller's (1976) adjustment option was used to convert each rater's scores to a common mean of 5.0 and a standard deviation of 1.00 (Keeth, 1990). According to Phalen and Albert (1992), adjusted ratings should be used when the raw ratings are believed to represent no more than the position of a task in the scale relative to another with respect to the characteristic in question.

Further, Phalen and Albert determined that adjusted ratings should be used when the only concern is agreement among raters in terms of ranking the tasks. The task factor ratings are treated as relative scales by raters, so analyses were conducted using the standardized rank order scores.

| Hypothesis Testing | |
|--|--|
| H_0 : $\rho_{TD1\ TD2} = 0$; no correlation between first page and second duplicate page in TD inventories | |
| H_a : $\rho_{TD1\ TD2} \neq 0$; significant correlation between first page and second duplicate page in TD inventories | |
| H_0 : $\rho_{TLD1\ TLD2} = 0$; no correlation between first page and second duplicate page in TLD inventories | |
| H_a : $\rho_{TLD1\ TLD2} \neq 0$; significant correlation between first page and second duplicate page in TLD inventories | |
| H_0 : $\rho_{TPD1\ TPD2} = 0$; no correlation between first page and second duplicate page in TPD inventories | |
| H_a : $\rho_{TPD1\ TPD2} \neq 0$; significant correlation between first page and second duplicate page in TPD inventories | |
| TD = Task Difficulty | |
| TLD = Task Learning Difficulty | |
| TPD = Task Performance Difficulty | |

Figure 7. Hypotheses I

Comparisons of each survey was then made. Differences between "task difficulty" and "task learning difficulty" survey data; and "task performance difficulty" and "task learning difficulty" survey data; and "task difficulty" and "task performance difficulty" survey data were examined by comparing tasks within duty areas and across the total survey, as well as creating a simple correlation matrix to examine both raw and standardized rank order task factor data. Due to the common perceptions associated with task difficulty ratings, a small relationship was expected between the data for the three task factor surveys. Hinkle, Wiersma, and Jurs (1979) offer a "Rule of Thumb for interpreting the size of correlation coefficients:

| | |
|-------------|--------------------------------|
| .90 to 1.00 | Very high positive correlation |
| .70 to .90 | High positive correlation |
| .50 to .70. | Moderate positive correlation |
| .30 to .50 | Low positive correlation |
| .00 to .30 | Little if any correlation |

While differences were expected to exist between the three task factors (see Figure 8), greater differences were predicted between task difficulty and task learning difficulty

then between task difficulty and task performance difficulty data. This prediction is based on the assumption that the known dimensions, as researched by Madden (1960, 1962), support distinctions between learning and performance difficulty. The lack of clarification in defining the general instructions of task difficulty would incline respondents towards the less specific performance aspect of difficulty when rating tasks (Cragun & McCormick, 1967; Madden, 1960, 1962; Morsh, Madden, & Christal, 1961). Interviews with subject matter experts were used to clarify the type of difficulty respondents may have applied in rating the tasks.

Hypothesis Testing

- H_0 : $\rho_{TD\ TLD} \geq .70$; high positive correlation between TD and TLD
 H_a : $\rho_{TD\ TLD} < .70$; moderate to no correlation between TD and TLD

 H_0 : $\rho_{TLD\ TPD} \geq .70$; high positive correlation between TLD and TPD
 H_a : $\rho_{TLD\ TPD} < .70$; moderate to no correlation between TLD and TPD

 H_0 : $\rho_{TD\ TPD} \geq .70$; high positive correlation between TD and TPD
 H_a : $\rho_{TD\ TPD} < .70$; moderate to no correlation between TD and TPD

Figure 8. Hypotheses II

Concerning validation, the most practical method to determine if data from a particular booklet format did in fact measure the learning aspect of task difficulty was to compare it to some criterion. Since no truly adequate criterion was available, a convergent validation paradigm was used. Percent time spent appeared to be a suitable surrogate criterion measure. Percent time spent (PTS) is a relative rating of the amount of time spent performing a task compared with time spent on the other tasks performed in a job. If a task which is more difficult to perform also takes longer to perform, a stronger relationship should exist between TD or TPD and PTS than the relationship between TLD and PTS (see Figure 9).

Although research is limited on this line of reasoning, Madden (1961) found a positive relationship (.82) between the length of time it takes to perform a task and difficulty ratings. More recent research by McCauley, O'Leary, and Rheinstein (1991) found only minimal correlations between 'task difficulty' and time spent performing (.25). The difference might be in the definition assigned to task difficulty. While Madden did not formally provide a definition, McCauley et al. used a learning aspect in their rating scale. Again, in light of the non-conclusive data, the difficulty data were validated using interviews with subject matter experts. Another suitable surrogate criterion is one or more aspects of time: time in the career field, total active military service (TAFMS), grade and skill level. Both Dittmar, Driskill, and Weismuller (1987) and Ruck, Thompson, and Stacy (1987) found that more experienced, higher-grade-level, and senior personnel performed the more difficult tasks. Earlier research by Lecznar (1971) also found a respectable correlation (.70) between mean task difficulty ratings and mean grade level of

incumbents. Stated differently, for individual tasks there is a degree of correspondence between grade level of individuals assigned to perform the tasks and the difficulty (i.e. the time to learn to perform satisfactorily) of the tasks. Higher-grade-level tasks take longer to learn to perform than lower-grade tasks. Therefore, task learning difficulty should have a higher correlation with aspects of the more senior time factors than task difficulty and task performance difficulty (see Figure 10).

| Hypothesis Testing | | |
|--|--|------|
| H_0 : $\rho_{TD\ PTS} \leq \rho_{TLD\ PTS}$; | lower correlation between TD and percent | time |
| spent performing tasks than TLD and PTS | | |
| H_a : $\rho_{TD\ PTS} > \rho_{TLD\ PTS}$; | higher correlation between TD and percent | time |
| spent performing tasks than TLD and PTS | | |
| H_0 : $\rho_{TPD\ PTS} \leq \rho_{TLD\ PTS}$; | lower correlation between TPD and percent | |
| time spent performing tasks than TLD and PTS | | |
| H_a : $\rho_{TPD\ PTS} > \rho_{TLD\ PTS}$; | higher correlation between TPD and percent | |
| time spent performing tasks than TLD and PTS | | |
| H_0 : $\rho_{TPD\ PTS} \leq \rho_{TD\ PTS}$; | lower correlation between TPD and percent | time |
| spent performing tasks than TD and PTS | | |
| H_a : $\rho_{TPD\ PTS} > \rho_{TD\ PTS}$; | higher correlation between TPD and percent | time |
| spent performing tasks than TD and PTS | | |

Figure 9. Hypotheses III

| Hypothesis Testing | | |
|--|--|---------|
| H_0 : $\rho_{TLD\ TM} \leq \rho_{TD\ TM}$; | lower correlation between TLD and senior time | factors |
| than TD and time factors | | |
| H_a : $\rho_{TLD\ TM} > \rho_{TD\ TM}$; | higher correlation between TLD and senior time | factors |
| than TD and time factors | | |
| H_0 : $\rho_{TLD\ TM} \leq \rho_{TPD\ TM}$; | lower correlation between TLD and senior time | factors |
| than TPD and time factors | | |
| H_a : $\rho_{TLD\ TM} > \rho_{TPD\ TM}$; | higher correlation between TLD and senior time | factors |
| than TPD and time factors | | |
| H_0 : $\rho_{TD\ TM} = \rho_{TPD\ TM}$; | no differences between TD and senior time factor | |
| correlations and TPD and time factors | | |
| H_a : $\rho_{TD\ TM} \neq \rho_{TPD\ TM}$; | significant differences between TD and senior | time |
| factor correlations and TPD and time factors | | |

Figure 10. Hypotheses IV

The final criterion to be examined was training emphasis. Ruck et al. (1987) found task learning difficulty factors had significant negative correlations with training emphasis, percent members performing first jobs (1-24 months TAFMS), and first job percent time spent. Negative correlations between task learning difficulty and training emphasis are reasonable to expect because tasks recommended for training emphasis for first termers (1-48 months TAFMS) should be those tasks that they routinely perform during their first jobs, not the more difficult tasks in the specialty. Task learning difficulty should then have higher negative correlations with training emphasis for tasks performed by incumbents in their first jobs than task difficulty or task performance difficulty (see Figure 11).

| Hypothesis Testing | | |
|--|--|-----------|
| H_0 : $\rho_{TLD\ TE} \leq \rho_{TD\ TE}$; lower (negative) correlation between TLD and training emphasis than TD and TE | | first job |
| H_a : $\rho_{TLD\ TE} > \rho_{TD\ TE}$; higher (negative) correlation between TLD and training emphasis than TD and TE | | first job |
| H_0 : $\rho_{TLD\ TE} \leq \rho_{TPD\ TE}$; lower (negative) correlation between TLD and training emphasis than TPD and TE | | first job |
| H_a : $\rho_{TLD\ TE} > \rho_{TPD\ TE}$; higher (negative) correlation between TLD and training emphasis than TPD and TE | | first job |
| H_0 : $\rho_{TD\ TE} = \rho_{TPD\ TE}$; no differences between TD and first job training emphasis correlations and TPD and TE | | training |
| H_a : $\rho_{TD\ TE} \neq \rho_{TPD\ TE}$; significant differences between TD and first job training emphasis correlations and TPD and TE | | training |

Figure 11. Hypotheses V

RESULTS

Survey Response

The survey response rate for the job inventory and task factor booklets is presented in Table 1.

Table 1. Survey Response Rate

| BOOKLET | MAILED | RETURNED | USABLE | PERCENT OF MAILED |
|-----------------------------------|--------|----------|--------|-------------------|
| Job Inventory (JI) | 2,223 | 1,859 | 1,637 | 74% |
| Task Difficulty (TD) | 75 | 60 | 52 | 69% |
| Task Learning Difficulty (TLD) | 75 | 59 | 53 | 71% |
| Task Performance Difficulty (TPD) | 75 | 63 | 54 | 72% |
| Training Emphasis (TE) | 75 | 62 | 56 | 75% |

As illustrated in Table 2, the survey sample distribution is representative of the assigned and eligible population across skill levels. The 1,637 respondents represent 35 percent of the eligible and 31 percent of the assigned AFSC 272X0 personnel.

Table 2. Skill Level Representation of Job Inventory Sample

| SKILL LEVEL | ASSIGNED ^a | | ELIGIBLE ^b | | JI SAMPLE | |
|-------------|-----------------------|---------------------|-----------------------|---------------------|--------------|-------------------|
| | Total Assigned | Percent of Assigned | Total Eligible | Percent of Eligible | Total Sample | Percent of Sample |
| 27230 | 1,046 | 20% | 1,002 | 21% | 343 | 21% |
| 27250 | 2,653 | 51% | 2,308 | 49% | 859 | 52% |
| 27270 | 1,299 | 25% | 1,168 | 25% | 383 | 23% |
| 27290 | 152 | 3% | 140 | 3% | 37 | 2% |
| 27200 | 70 | 1% | 65 | 1% | 15 | 1% |
| Total | 5,220 | 100% | 4,683 | 99% | 1,637 | 99% |

Note. Columns due not add to 100 percent due to rounding.

^a Assigned Strength as of March 1992

^b Excludes those in PCS, retirement, discharge, or hospital status; and those with less than 6 weeks on the job

Several critical biographical items were used to identify the groups needed for analyses. The survey sample response rates for these key groups are also displayed in Table 3. As shown, response rates between task factor booklets are highly similar across the four groups: paygrade, skill level, Total Active Federal Military Service (TAFMS), and Time in Career Field (TICF).

Task Factor Reliability

Hypothesis I: Testing for Intrarater Reliability

A Pearson product moment correlation was used to determine the relationship between the same set of tasks which were purposely placed in the booklets twice. Table 4 lists the duplicate tasks and their corresponding correlation coefficient for each task factor. The correlations were significant at $p < .05$ with most at $p < .0001$. The one exception, Task F250 as rated with task performance difficulty (TPD) guidance, was recalculated after removing two divergent raters, Case Control Numbers (CCNs) 18 and 60, which increased the correlation to $r = .7727$. A Fisher's z-transformation at .05 level of significance was used to determine if correlations were significant. All duplicate tasks, regardless of method of task factor rating, showed a correlation of greater than or equal to .70. Using a Student's t-test, differences were also noted in the mean correlation for the 24 duplicate tasks. At a .05 level of significance, TPD correlations were lower than TD and TLD correlations ($M_{TD} = 0.816$, $M_{TLD} = 0.829$, $M_{TPD} = 0.738$; $t_{CV} = 2.02$, $df = 46$). Distribution of the correlations for each task factor identified 22 task learning difficulty (TLD) tasks with correlations greater than .70 versus 21 and 15 tasks with an $r \geq .70$ for task difficulty (TD) and TPD tasks respectively. Hinkle, Wiersma, and Jurs (1979) identified correlations less than .70 as moderate, low, or little as r approached zero.

In order to obtain a minimum of 20 ratings per task, survey respondents were asked to rate all tasks in which they had knowledge, including tasks they currently or previously performed and those tasks they observed or supervised others performing. In some cases, respondents are unable to rate every task due to lack of task knowledge or perhaps lack of comfort with the rating scheme. While all tasks were rated by more than 20 raters, 21 tasks received ratings from over 30 TLD respondents. Similarly, 19 tasks received ratings by over 30 TPD raters, but only five tasks were rated by more than 30 TD raters. A comparison of the mean number of raters for tasks 229 through 252 identified the only significant difference ($p < .05$) was between the mean number of TD raters and TLD raters, $M_{TD} = 28.33$, $M_{TLD} = 32.38$, ($t_{CV} = 2.02$, $df = 46$). The mean number of TPD raters for the 24 duplicate tasks was 30.13 and was not significantly different from the number of TD or TLD raters.

Table 3. Survey Response Rate by Critical Groups

| GROUP | JI SAMPLE | TD SAMPLE | TLD SAMPLE | TPD SAMPLE | TE SAMPLE |
|----------------|--------------|--------------|---------------|---------------|--------------|
| PAYGRADE | | | | | |
| E-1/2/3 | 276 | | | | |
| E-4/5/6 | 1,158 | 34 | 38 | 36 | 31 |
| E-7/8/9 | 203 | 18 | 15 | 18 | 25 |
| SKILL LEVEL | | | | | |
| 27230 | 343 | | | | |
| 27250 | 859 | | 1 | | |
| 27270 | 383 | 51 | 51 | 51 | 56 |
| 27290 | 37 | 1 | 1 | 2 | |
| 27200 | 15 | | | 1 | |
| TAFMS (months) | | | | | |
| 1-48 | 473 | | | | |
| 1-24 | 162 | | | | |
| 25-48 | 311 | | | | |
| 49-96 | 419 | | | | |
| 97 + | 745 | 52 | 53 | 54 | 56 |
| 97-144 | 287 | 7 | 5 | 3 | 6 |
| 145-192 | 216 | 22 | 21 | 20 | 19 |
| 193-240 | 182 | 19 | 23 | 29 | 27 |
| 241 + | 60 | 4 | 4 | 2 | 4 |
| TICF (months) | | | | | |
| 1-24 | 356 | | 1 | | |
| 1-48 | 722 | | 1 | | |
| 49-96 | 325 | 1 | 2 | 1 | 3 |
| 97 + | 590 | 51 | 50 | 53 | 53 |
| Total | 1,637 | 52 | 53 | 54 | 56 |

Table 4. Hypothesis I: Duplicate Task Correlations within Task Factor Booklets

| Duplicate Task | TD | | TLD | | TPD | |
|----------------|------|----|------|----|-------------------|----|
| | r | n | r | n | r | n |
| F229 | .666 | 35 | .747 | 37 | .783 | 39 |
| F230 | .798 | 28 | .873 | 31 | .755 | 32 |
| F231 | .768 | 33 | .855 | 34 | .549 | 35 |
| F232 | .658 | 31 | .817 | 34 | .673 | 34 |
| F233 | .669 | 31 | .814 | 33 | .828 | 34 |
| F234 | .793 | 31 | .898 | 34 | .590 | 33 |
| F235 | .812 | 30 | .904 | 34 | .789 | 33 |
| F236 | .856 | 30 | .862 | 34 | .774 | 32 |
| F237 | .721 | 30 | .852 | 34 | .760 | 31 |
| F238 | .715 | 30 | .835 | 34 | .748 | 32 |
| F239 | .890 | 29 | .810 | 33 | .767 | 32 |
| F240 | .874 | 29 | .865 | 34 | .919 | 33 |
| F241 | .848 | 29 | .755 | 33 | .739 | 32 |
| F242 | .881 | 29 | .813 | 34 | .856 | 32 |
| F243 | .845 | 29 | .800 | 34 | .861 | 32 |
| F244 | .872 | 18 | .573 | 21 | .518 | 23 |
| F245 | .856 | 18 | .843 | 25 | .601 | 23 |
| F246 | .761 | 28 | .880 | 31 | .779 | 32 |
| F247 | .880 | 26 | .930 | 33 | .805 | 27 |
| F248 | .899 | 28 | .821 | 33 | .623 | 33 |
| F249 | .912 | 25 | .870 | 29 | .694 | 30 |
| F250 | .872 | 29 | .902 | 33 | .262 ^a | 31 |
| F251 | .866 | 25 | .951 | 31 | .663 | 29 |
| F252 | .872 | 29 | .615 | 34 | .858 | 32 |

$p = .0001^*$

^a corrected to $r = .773$

| | |
|------------------|----------------|
| * TLD F244 $p =$ | TPD F244 $p =$ |
| .0066 | .0114 |
| TPD F231 $p =$ | TPD F245 $p =$ |
| .0006 | .0024 |
| TPD F234 $p =$ | TPD F250 $p =$ |
| .0003 | .1545 |

Interrater Reliability

Similar to CCNs 18 and 60, 19 task factor raters were identified as unacceptable by the CODAP GRPREL program. As with most studies, reasons raters were deemed as divergent include a high percentage of unrated tasks, a low standard deviation from the same ratings being applied to all tasks, reversal of rating scale, or general non-cooperation. As depicted in Table 5, six raters were removed from the task difficulty sample, one rater from the task learning difficulty sample, and four raters were removed from the task performance difficulty sample. Removal of these raters raised the reliability of composite raters to over .90 which is considered a high interrater reliability (Christal & Weismuller, 1976; Goody, 1976). Using a normal z-test to test differences between two independent proportions, the one TLD divergent rater of the sample of 53 was significantly ($p < .05$; $z_{CV} = 1.96$) less than the six TD divergent raters removed from the sample of 52 TD raters.

Using a student's t-test ($t_{CV} = 1.98$, $p < .05$, $df = 1004$), no differences were noted between the mean number of raters per task. However several tasks had less than 20 raters, specifically, 67 TD tasks, 25 TLD tasks, and 50 TPD tasks.

Table 5. Descriptive Statistics for Raw and Standardized Task Factors

| TASK FACTOR | RAW | | | DIVERGENT RATERS | STANDARDIZED | | | | MEAN RATERS/TASK |
|-------------|-----|------|------|------------------|--------------|------|------|--------|------------------|
| | N | M | SD | | N | M | SD | R(k,k) | |
| TD | 52 | 5.00 | 0.88 | 6 | 46 | 5.00 | 1.00 | .941 | 34.24 |
| TLD | 53 | 5.26 | 0.91 | 1 | 52 | 5.00 | 1.00 | .955 | 43.16 |
| TPD | 54 | 4.94 | 1.11 | 4 | 50 | 5.00 | 1.00 | .960 | 38.04 |
| TE | 56 | 3.22 | 2.27 | 8 | 48 | N/A | N/A | .974 | 48.00 |

Task Factor Ratings

Hypothesis II: Testing for Relationships Between Task Factor Ratings

The remaining correlation analysis was completed using the CODAP Curves program which utilizes the Spearman Brown Prophecy formula for rank order data. The task factor correlation matrix with corresponding regression values are displayed in Table 6. A student's t-test ($t_{CV} = 1.684$, $df = 44$) at a .05 level of significance was used to test the null hypothesis that correlations would be $\geq .70$. The correlations for the task factors ratings were greater than .70. Therefore, the null hypothesis could not be rejected.

Table 6. Hypothesis II: Task Factor Correlation Matrix and Computed R² Values

| Raw/Standardized TASK FACTOR | r | | | R ² | | |
|---------------------------------|-------|-------|-----|----------------|-------|-----|
| | TD | TLD | TPD | TD | TLD | TPD |
| TD | - | | | - | | |
| TLD | .8939 | - | | .7990 | - | |
| TPD | .8769 | .9492 | - | .7689 | .9009 | - |

A significant relationship was found using Fisher's z-transformation in testing for differences in independent correlations between $r_{TLD\ TPD}$ and $r_{TD\ TPD}$. Specifically the .9492 correlation between TLD and TPD is significantly higher than the TD and TPD correlation of .8769 at a .05 level of significance ($z_{CV} = 1.96$).

Task Factor Rating Distributions

The distribution of tasks for each task factor is presented in Table 7. Of the 514 tasks, 79 tasks were rated high (M+1SD) by task difficulty raters. Another 345 tasks fell within or slightly below the mean. Similarly, 76 tasks received high task learning difficulty ratings and 355 rated average to slightly below average. Task performance difficulty raters rated 78 tasks as very difficult with 343 falling within the mean or 1 standard deviation below.

Table 7. Distribution of Task Factor Tasks

| FACTOR | M+2SD | M+1SD | M | M-1SD | M-2SD | M-3+SD |
|--------|-------|-------|-----|-------|-------|--------|
| TD | 4 | 75 | 186 | 159 | 59 | 20 |
| TLD | 13 | 63 | 182 | 173 | 58 | 14 |
| TPD | 13 | 65 | 177 | 166 | 66 | 16 |

Task Data Comparisons Across Survey Booklet

Tables 8, 9 and 10 list the tasks receiving high (M+1SD) difficulty ratings for Task Difficulty, Task Learning Difficulty, and Task Performance Difficulty respectively. A core of 43 tasks were rated as highly difficult by all three rating strategies. The tasks considered difficult by only one or two rating methods are highlighted. A complete listing of AFSC 272X0 duty titles and task statements are located in Appendix F.

Table 8. All Task Difficulty Tasks > Mean + 1 SD

| TASK DIFFICULTY | | | | | | | |
|-----------------|------|-------------|------|-------------|------|-------------|------|
| TASK | M | TASK | M | TASK | M | TASK | M |
| B 80 | 7.15 | I448 | 6.15 | C108 | 6.04 | B 86 | 6.12 |
| F211 | 7.14 | I452 | 6.13 | A 8 | 6.04 | A 20 | 6.11 |
| B 81 | 7.09 | B 84 | 6.59 | C102 | 6.03 | D165 | 6.11 |
| B 94 | 7.02 | C111 | 6.58 | C133 | 6.29 | J494 | 6.11 |
| B 59 | 6.99 | B 74 | 6.56 | C118 | 6.29 | A 9 | 6.10 |
| C131 | 6.96 | I445 | 6.53 | I467 | 6.28 | I475 | 6.09 |
| B 62 | 6.94 | I472 | 6.51 | B 64 | 6.25 | C106 | 6.09 |
| I471 | 6.94 | B 89 | 6.51 | J497 | 6.23 | J490 | 6.08 |
| B 87 | 6.91 | D176 | 6.45 | D160 | 6.23 | C103 | 6.08 |
| C110 | 6.90 | C107 | 6.45 | J498 | 6.23 | I473 | 6.07 |
| E194 | 6.87 | C134 | 6.44 | C105 | 6.20 | B 65 | 6.07 |
| I446 | 6.78 | D154 | 6.43 | A 16 | 6.19 | A 38 | 6.07 |
| B 61 | 6.76 | J482 | 6.42 | C 97 | 6.19 | F247 | 6.06 |
| C 98 | 6.73 | J499 | 6.40 | E200 | 6.18 | J492 | 6.06 |
| A 37 | 6.70 | A 39 | 6.39 | B 88 | 6.18 | I442 | 6.05 |
| B 85 | 6.66 | C101 | 6.36 | E201 | 6.17 | J500 | 6.05 |
| C135 | 6.64 | D158 | 6.36 | I461 | 6.17 | J495 | 6.03 |
| C112 | 6.64 | E198 | 6.33 | E199 | 6.16 | E188 | 6.01 |
| D143 | 6.61 | H418 | 6.31 | C104 | 6.16 | J493 | 6.01 |
| E186 | 6.60 | A 15 | 6.30 | C132 | 6.15 | | |

* **Bold Tasks:** Tasks not rated as "high difficulty" by TD, TLD and TPD raters
(Non-core Tasks)

Table 9. All Task Learning Difficulty Tasks > Mean + 1 SD

| TASK LEARNING DIFFICULTY | | | | | | | |
|--------------------------|------|-------------|------|-------------|------|-------------|------|
| TASK | M | TASK | M | TASK | M | TASK | M |
| C131 | 7.55 | J493 | 6.79 | F211 | 6.81 | B 94 | 6.43 |
| B 80 | 7.52 | I446 | 6.74 | C110 | 6.80 | D161 | 6.11 |
| J496 | 7.34 | I445 | 6.68 | D176 | 6.43 | C105 | 6.10 |
| J499 | 7.32 | B 55 | 6.67 | A 37 | 6.43 | J490 | 6.10 |
| D154 | 7.32 | J485 | 6.66 | C130 | 6.42 | J484 | 6.08 |
| J500 | 7.28 | J482 | 6.64 | E188 | 6.38 | A 16 | 6.08 |
| J497 | 7.19 | J480 | 6.60 | B 64 | 6.38 | E186 | 6.05 |
| B 62 | 7.19 | I442 | 6.60 | C112 | 6.36 | E201 | 6.05 |
| J498 | 7.14 | A 9 | 6.60 | C133 | 6.34 | J481 | 6.04 |
| J495 | 7.13 | J488 | 6.59 | C 98 | 6.33 | C104 | 6.04 |
| A 8 | 7.10 | J487 | 6.58 | C135 | 6.31 | I469 | 6.04 |
| B 59 | 7.10 | J478 | 6.58 | C132 | 6.28 | I461 | 6.03 |
| J494 | 7.08 | B 61 | 6.58 | J483 | 6.21 | D165 | 6.03 |
| B 81 | 6.97 | J486 | 6.57 | I452 | 6.17 | I451 | 6.02 |
| E194 | 6.97 | I472 | 6.57 | E199 | 6.14 | F247 | 6.02 |
| C111 | 6.90 | I474 | 6.57 | A 39 | 6.14 | I475 | 6.01 |
| J502 | 6.85 | J479 | 6.55 | D158 | 6.14 | G362 | 6.01 |
| A 15 | 6.83 | J501 | 6.48 | B 65 | 6.12 | | |
| I471 | 6.81 | E198 | 6.48 | J503 | 6.44 | | |

* **Bold Tasks:** Tasks not rated as "high difficulty" by TD, TLD and TPD raters
(Non-core Tasks)

Table 10. All Task Performance Difficulty Tasks > Mean + 1 SD

| TASK PERFORMANCE DIFFICULTY | | | | | | | |
|-----------------------------|------|-------------|------|-------------|------|-------------|------|
| TASK | M | TASK | M | TASK | M | TASK | M |
| J497 | 7.39 | J502 | 6.84 | B 59 | 6.44 | E186 | 6.16 |
| J498 | 7.27 | J485 | 6.83 | I445 | 6.43 | B 91 | 6.16 |
| J495 | 7.23 | C135 | 6.77 | F211 | 6.43 | A 18 | 6.16 |
| J488 | 7.19 | J479 | 6.76 | D176 | 6.42 | D143 | 6.15 |
| J496 | 7.19 | J490 | 6.76 | A 16 | 6.40 | I468 | 6.13 |
| J500 | 7.19 | A 8 | 6.76 | C132 | 6.37 | D158 | 6.11 |
| J494 | 7.10 | J482 | 6.73 | I469 | 6.37 | I475 | 6.10 |
| B 94 | 7.09 | J483 | 6.72 | C133 | 6.35 | B 87 | 6.09 |
| J486 | 7.05 | D154 | 6.69 | A 29 | 6.35 | C107 | 6.09 |
| J499 | 7.04 | A 15 | 6.63 | B 55 | 6.35 | F247 | 6.08 |
| C131 | 7.04 | J480 | 6.60 | B 81 | 6.34 | E198 | 6.08 |
| J492 | 7.02 | J478 | 6.58 | C110 | 6.33 | B 66 | 6.05 |
| J493 | 7.02 | C134 | 6.57 | E194 | 6.32 | I451 | 6.03 |
| J501 | 6.99 | J484 | 6.53 | C112 | 6.32 | E188 | 6.02 |
| B 80 | 6.99 | I472 | 6.53 | C 98 | 6.31 | B 74 | 6.02 |
| J503 | 6.94 | I446 | 6.48 | B 61 | 6.31 | A 20 | 6.02 |
| I471 | 6.90 | B 64 | 6.47 | J481 | 6.28 | A 7 | 6.02 |
| J491 | 6.88 | C111 | 6.46 | B 89 | 6.23 | G358 | 6.01 |
| J489 | 6.88 | B 62 | 6.46 | A 39 | 6.18 | | |
| J487 | 6.85 | C130 | 6.45 | F265 | 6.18 | | |

* **Bold Tasks:** Tasks not rated as "high difficulty" by TD, TLD and TPD raters (Non-core Tasks)

Task Data Comparisons Within Duty Areas

Survey data were also divided into duty areas. Tables 11, 12, and 13 display task factor information across the duty areas. Specifically, Table 11 includes the interrater reliability of ratings for each duty. The task factor interrater reliability for the Duties B and F are high for the three task factors. Duties A, B, D, and F had high TLD and TPD interrater reliability. Duty E had high TLD reliability. The average rater reliability for the remaining duty areas were acceptable, except for TD and TPD Duties I and J and TLD Duty J. Duty Area J also averaged less than 20 raters per task for all three task factors.

Table 11. Interrater Reliability of Raw Task Factors Across Duty Areas

| DUTY | | TD | | | TLD | | | TPD | | |
|------|-------|--------|----|---------|--------|----|---------|--------|----|---------|
| AREA | TASKS | R(k,k) | n | mean | R(k,k) | n | mean | R(k,k) | n | mean |
| | N | | | n/tasks | | | n/tasks | | | n/tasks |
| A | 47 | .855 | 51 | 41.3 | .952 | 49 | 42.4 | .937 | 48 | 41.8 |
| B | 49 | .934 | 42 | 29.4 | .938 | 47 | 37.8 | .938 | 46 | 34.0 |
| C | 39 | .747 | 52 | 38.2 | .818 | 53 | 43.8 | .754 | 53 | 40.4 |
| D | 50 | .812 | 52 | 38.9 | .905 | 48 | 39.9 | .920 | 45 | 34.2 |
| E | 20 | .838 | 50 | 36.2 | .942 | 51 | 41.4 | .881 | 52 | 39.7 |
| F | 143 | .914 | 46 | 41.6 | .927 | 46 | 43.2 | .933 | 49 | 44.8 |
| G | 59 | .767 | 50 | 42.7 | .822 | 53 | 48.6 | .621 | 51 | 45.0 |
| H | 34 | .832 | 45 | 41.1 | .897 | 43 | 42.4 | .799 | 51 | 48.7 |
| I | 36 | .017 | 23 | 18.9 | .802 | 36 | 26.8 | .473 | 38 | 25.9 |
| J | 26 | -.008 | 21 | 18.0 | -.010 | 21 | 18.4 | -.133 | 21 | 15.2 |

Table 12. Rank Order of Raw Task Factor Means Across Duty Areas

| DUTY | TD | | | TLD | | | TPD | | |
|------|------|------|------|------|------|-----|------|------|------|
| | rank | M | SD | rank | M | SD | rank | M | SD |
| A | 7 | 4.86 | .70 | 7 | 5.31 | .95 | 5 | 5.17 | .95 |
| B | 1 | 5.51 | 1.11 | 4 | 5.58 | .97 | 3 | 5.31 | 1.05 |
| C | 2 | 5.47 | .51 | 3 | 5.76 | .54 | 2 | 5.39 | .57 |
| D | 3 | 4.99 | .60 | 5 | 5.37 | .73 | 6 | 5.12 | .81 |
| E | 5 | 4.89 | .74 | 5 | 5.37 | .90 | 7 | 4.69 | .83 |
| F | 10 | 4.37 | .87 | 10 | 4.66 | .85 | 9 | 4.31 | .95 |
| G | 8 | 4.77 | .48 | 8 | 5.20 | .48 | 8 | 4.47 | .46 |
| H | 9 | 4.48 | .61 | 9 | 4.69 | .74 | 10 | 4.13 | .60 |
| I | 6 | 4.88 | .45 | 2 | 5.81 | .64 | 4 | 5.19 | .63 |
| J | 4 | 4.90 | .19 | 1 | 6.65 | .32 | 1 | 6.45 | .18 |

Duty areas were prioritized by rank ordering task factors by their mean ratings (see Table 12). The scores of each task factor resulted in a different rank order for the 10 duty areas. Task difficulty ratings ranged from M Duty B = 5.51 to M Duty F = 4.37. The highest TLD ranking is Duty J (M Duty J = 6.65) and the lowest is Duty F (M Duty F = 4.66). TPD ratings ranged from M Duty J = 6.45 to M Duty H = 4.13. Several standard deviations are also fairly large, such as 1.05 and 1.11 for TD and TPD Duty B.

A general comparison of tasks rated high for each duty area is listed in Table 13. As shown, several tasks were considered highly difficult (M+1SD) and are common to the three rating schemes.

Task Factors and Criterion Measures

Hypothesis III: Testing for Relationships Between Task Factor Ratings and Percent Time Spent Criteria

A summary of the correlations and regression values for task factor ratings and percent time spent ratings are listed in Table 14. Moderate correlations suggest a relationship of more time spent performing the less difficult tasks and less time spent performing the tasks rated as highly difficult for all three task factor surveys. Using Fisher's z-transformation ($z_{CV} = 1.96, p < .05$), no differences were found between the three task factor rating correlations and the total percent time spent ratings, accepting the null hypotheses. The trend of no differences was noted in all percent time spent criterion groups across all factors. Further, higher order regression analysis was also conducted using the CODAP Curves program. Higher order polynomials did not significantly contribute to regression results.

Analyses within criterion groups found lower paygrades, less experienced skill levels, less senior TAFMS, and TICF personnel had significantly higher correlations than their senior more experienced counterparts. The junior, less experienced personnel spend more time performing the less difficult tasks. Two exceptions included TLD and TPD TICF correlations and TPD TAFMS correlations. The top 25 tasks in which the senior criterion groups spend the most amount of time performing and the corresponding rank order of task factor scores are shown in Appendix G.

Hypothesis IV: Testing for Relationships Between Task Factor Ratings and Percent Members Performing Criteria

Using Fisher's z-transformation test for independent correlation comparisons at .05 level of significance, the null hypothesis could not be rejected. Correlations between the different task factors for the percent members performing criterion were not significantly different. Higher order regression analysis, also using the CODAP Curves program, did not significantly improve predictions, R^2 . No differences were noted in

relationship with experience or seniority factors either. Correlation details and R² values are summarized in Table 15. The 25 tasks performed by the highest percent of criterion group members are shown in Appendix H.

Table 13. Task Factor Tasks > Raw Mean +1 SD in Each Duty Area

| DUTY | TD | TLD | TPD | | DUTY | TD | TLD | TPD |
|------|------------|------------|------------|--|------|-------------|-------------|-------------|
| A | A37 | A15 | A15 | | C | C131 | C131 | C131 |
| | A39 | A 8 | A 8 | | | C 98 | C111 | C132 |
| | A15 | A16 | A16 | | | C135 | C110 | C133 |
| | A38 | A 9 | A39 | | | C110 | C 98 | C135 |
| | A 8 | A37 | A29 | | | C112 | C135 | C111 |
| | A 9 | A39 | A18 | | | C107 | C130 | C112 |
| | A29 | | | | | | | C130 |
| | A20 | | | | D | D154 | D154 | D154 |
| B | B94 | B80 | B80 | | | D143 | D176 | D176 |
| | B59 | B81 | B94 | | | D158 | D161 | D165 |
| | B62 | B55 | B91 | | | D176 | D143 | D161 |
| | B87 | B62 | B81 | | | D160 | D158 | D158 |
| | B84 | B59 | B62 | | | D165 | D165 | D143 |
| | B80 | B61 | B64 | | | D162 | | D162 |
| | B85 | B94 | | | | D161 | | |
| | B81 | | | | E | E194 | E194 | E194 |
| | B93 | | | | | E186 | E198 | E198 |
| | B74 | | | | | E198 | E188 | E186 |
| | B91 | | | | | E200 | E199 | E188 |

* **Bold Tasks** = Tasks not rated as "high difficulty" by TD, TLD, and TPD raters
(Non-Core Tasks)

Table 13. continued

| DUTY | TD | TLD | TPD | | DUTY | TD | TLD | TPD |
|------|------|------|------|--|------|------|------|------|
| F | F211 | F211 | F211 | | G | G398 | G362 | G358 |
| | F251 | F245 | F247 | | | G401 | G358 | G396 |
| | F273 | F247 | F265 | | | G400 | G361 | G370 |
| | F247 | F265 | F314 | | | G366 | G373 | G395 |
| | F245 | F317 | F317 | | | G362 | G351 | G400 |
| | F314 | F261 | F318 | | | G351 | G366 | G398 |
| | F318 | F314 | F275 | | | G361 | G396 | G351 |
| | F261 | F251 | F261 | | | G373 | G398 | G355 |
| | F317 | F316 | F251 | | | G393 | G400 | G362 |
| | F272 | F315 | F319 | | | | G395 | |
| | F319 | F249 | F249 | | H | H418 | H418 | H418 |
| | F244 | F318 | F316 | | | H412 | H430 | H430 |
| | F271 | F275 | F315 | | | H430 | H424 | H424 |
| | F240 | F307 | F212 | | | H413 | H412 | H412 |
| | F307 | F273 | F273 | | | H424 | H413 | H413 |
| | F265 | F244 | F248 | | | H419 | H419 | H419 |
| | F323 | F222 | F272 | | I | I471 | I471 | I471 |
| | F249 | F323 | F240 | | | I446 | I446 | I472 |
| | F321 | F319 | F309 | | | I472 | I445 | I446 |
| | F264 | F264 | F271 | | | I445 | I472 | I445 |
| | F248 | F219 | F307 | | | I461 | I474 | I469 |
| | F219 | F217 | F219 | | | I473 | | |
| | F309 | F248 | | | J | J482 | J500 | J497 |
| | | | | | | J498 | J497 | J498 |
| | | | | | | J494 | J496 | J488 |
| | | | | | | J499 | J495 | J495 |
| | | | | | | | J499 | J500 |
| | | | | | | | J494 | J496 |

Table 14. Hypothesis III: Task Factor Correlation with Percent Time Spent and Computed R² Values

| PTS CRITERION | r | | | R ² | | |
|------------------|--------|--------|--------|----------------|-------|-------|
| | TD | TLD | TPD | TD | TLD | TPD |
| TOTAL | -.5852 | -.5473 | -.6165 | .3425 | .2996 | .3801 |
| PAYGRADE | | | | | | |
| E-1/2/3 | -.5989 | -.5398 | -.6047 | .3587 | .2913 | .3656 |
| E-4/5/6 | -.5889 | -.5442 | -.6181 | .3468 | .2961 | .3820 |
| E-7/8/9 | -.1870 | -.2767 | -.2779 | .0350 | .0765 | .0772 |
| SKILL LEVEL | | | | | | |
| 27230 | -.6063 | -.5424 | -.6079 | .3676 | .2942 | .3695 |
| 27250 | -.5846 | -.5355 | -.6126 | .3417 | .2868 | .3753 |
| 27270 | -.4822 | -.5032 | -.5533 | .2325 | .2532 | .3061 |
| 28290 | -.0006 | -.0995 | -.0465 | .0000 | .0099 | .0022 |
| 27200 | +.0597 | -.0200 | +.0088 | .0036 | .0004 | .0001 |
| TAFMS (months) | | | | | | |
| 1-24 | -.5966 | -.5344 | -.5966 | .3559 | .2856 | .3560 |
| 1-48 | -.6014 | -.5435 | -.6127 | .3617 | .2954 | .3754 |
| 49-96 | -.5975 | -.5384 | -.6170 | .3571 | .2898 | .3806 |
| 97+ | -.5134 | -.5148 | -.5708 | .2636 | .2650 | .3259 |
| 97-144 | -.5644 | -.5335 | -.6034 | .3185 | .2846 | .3641 |
| 145-192 | -.5041 | -.5019 | -.5598 | .2541 | .2519 | .3134 |
| 193-240 | -.4326 | -.4616 | -.4976 | .1871 | .2131 | .2476 |
| 241 + | -.0412 | -.1469 | -.1272 | .0017 | .0216 | .0162 |
| TICF (months) | | | | | | |
| 1-24 | -.6024 | -.5410 | -.6029 | .3629 | .2927 | .3635 |
| 1-48 | -.6044 | -.5456 | -.6146 | .3653 | .2977 | .3778 |
| 49-96 | -.5745 | -.5293 | -.6116 | .3300 | .2801 | .3741 |
| 97+ | -.4808 | -.4940 | -.5449 | .2312 | .2440 | .2969 |

Table 15. Hypothesis IV: Task Factor Correlation with Percent Members Performing and Computed R² Values

| PMP CRITERION | r | | | R ² | | |
|------------------|--------|--------|--------|----------------|-------|-------|
| | TD | TLD | TPD | TD | TLD | TPD |
| TOTAL PMP | .5961 | .5705 | .6396 | .3553 | .3255 | .4090 |
| PAYGRADE | | | | | | |
| E-1/2/3 | -.6015 | -.5558 | -.6189 | .3619 | .3090 | .3830 |
| E-4/5/6 | -.5914 | -.5613 | -.6342 | .3497 | .3150 | .4022 |
| E-7/8/9 | -.4935 | -.5439 | -.5801 | .2436 | .2958 | .3365 |
| SKILL LEVEL | | | | | | |
| 27230 | -.6078 | -.5579 | -.6247 | .3695 | .3112 | .3903 |
| 27250 | -.5863 | -.5511 | -.6265 | .3438 | .3037 | .3925 |
| 27270 | -.5659 | -.5770 | -.6337 | .3203 | .3329 | .4016 |
| 28290 | -.3160 | -.4083 | -.3769 | .0999 | .1667 | .1420 |
| 27200 | -.2712 | -.3431 | -.3655 | .0735 | .1177 | .1336 |
| TAFMS (months) | | | | | | |
| 1-24 | -.6040 | -.5531 | -.6148 | .3648 | .3059 | .3780 |
| 1-48 | -.6005 | -.5551 | -.6226 | .3606 | .3081 | .3877 |
| 49-96 | -.5942 | -.5509 | -.6288 | .3531 | .3035 | .3954 |
| 97+ | -.5702 | -.5713 | -.6331 | .3252 | .3263 | .4009 |
| 97-144 | -.5705 | -.5526 | -.6235 | .3255 | .3053 | .3887 |
| 145-192 | -.5682 | -.5665 | -.6285 | .3229 | .3209 | .3950 |
| 193-240 | -.5555 | -.5760 | -.6290 | .3086 | .3318 | .3957 |
| 241 + | -.4225 | -.4949 | -.5046 | .1785 | .2449 | .2546 |
| TICF (months) | | | | | | |
| 1-24 | -.6045 | -.5574 | -.6201 | .3654 | .3107 | .3845 |
| 1-48 | -.6012 | -.5565 | -.6250 | .3615 | .3097 | .3906 |
| 49-96 | -.5817 | -.5469 | -.6274 | .3384 | .2991 | .3936 |
| 97+ | -.5630 | -.5720 | -.6306 | .3170 | .3272 | .3977 |

Hypothesis V: Testing for Relationships Between Task Factor Ratings and Training Emphasis Criteria

The null hypotheses concerning the strength of relationships between difficulty task factors and tasks receiving high training emphasis which are also performed by at least 30 percent of first job personnel could not be rejected. As shown in Table 16, and supported by a student's t-test ($t_{CV} = 1.684$, $df = 44$, $p < .05$) the correlations were not significantly different from 0. Appendix I lists the TE tasks receiving the highest ratings and shows those performed by at least 50 percent of members in their first job (1-24 months TAFMS). The rank order of the tasks are also included.

Table 16. Hypothesis V: Task Factor Correlation with Training Emphasis of Tasks Performed by First Job Personnel and Computed R^2 Values

| CRITERION TE | r | | | R ² | | |
|-----------------|--------|--------|--------|----------------|-------|-------|
| | TD | TLD | TPD | TD | TLD | TPD |
| >30 PMP 1st Job | +.0941 | +.1303 | +.0087 | .0089 | .0170 | .0001 |

DISCUSSION

Efforts to establish a new task difficulty collection procedure which would improve the reliability of data and provide more valid measures of difficulty were partially successful. Consistent with previous research which supports the significance of collecting data which emphasize the learning aspect of difficulty, the relationship among task difficulty, task learning difficulty and task performance difficulty was examined. Further comparisons were made to other task data, such as time spent, seniority and experience ratings, and training emphasis factors, to evaluate convergent validity of the three measures of task difficulty. A discussion of these results is presented in the following sequence: brief comments on the survey response rate, discussions of intra- and inter-rater reliability, the relationship between task difficulty factors, and finally remarks about the relationship of task difficulty factors and the criterion measures.

Survey Response

The 60 percent return rate projected by USAFOMS historical records was far exceeded with 74 percent of the mailed job inventories and over 69 percent of the task factor surveys being usable. According to USAFOMS procedures for data collection, both major command (MAJCOM) and skill level distributions must be represented in the survey sample before administration closure. Achieving a mirror distribution of these two groups allows conclusions to be generalized to the entire career field population. Unfortunately, during the survey period, the Air Force was involved with restructuring its major commands. As a result, accurate MAJCOM distribution data were not available. However, as illustrated in Table 2, the survey sample is representative across skill levels. The accuracy of the skill level distribution combined with the high survey return rate support the creditability and the generalizability of the results.

Similar task factor response rates were also necessary to increase the validity of the results. As shown in Table 3, approximately equal numbers of respondents across all experience and seniority groups rated each task factor booklet. As a whole, task factor respondents were AFSC 272X0, 7-skill level, technical or master sergeants (E-6 through E-8), with over 97 months in the career field and 145-240 months of active federal military service.

Task Factor Reliability

Intrarater Reliability

The first task factor reliability objective was to ensure respondents were using the same logic when rating all tasks within their task factor booklet. As expected, correlations between all duplicate tasks were very high. This indicates that within rating scale types, the same thought process was generally used in rating all the tasks; i.e., the ratings are reliable regardless of the type of difficulty rating instruction. Task Learning Difficulty (TLD) and Task Difficulty (TD) raters demonstrated stronger test-retest reliability when compared to Task Performance Difficulty (TPD). The lower correlations between TPD task ratings imply the various aspects of performance difficulty may somewhat impact the

consistency of the thought process when rating several tasks. TPD raters may have more difficulty identifying the reasons tasks are difficult to perform and consistently applying that rating rationale throughout the TPD inventory compared to the TD and TLD inventories.

Several researchers, such as Christal (1974) and Ruck, Thompson, and Thompson (1978), have determined that a minimum of 20 to 40 raters is needed to obtain reliable task factor information. More raters (30 +) increases the likelihood that the data will be usable. While more than 20 respondents rated the 24 duplicate tasks, only five tasks were rated by greater than 30 TD raters. This was significantly less than the 21 tasks rated by 30 TLD respondents. This difference did not impact the results of this study, but in context of future surveys, the greater number of respondents rating tasks as demonstrated by the TLD inventory, may reduce the probability of collecting difficulty data which can not be used because an insufficient number of raters rated the tasks.

Interrater Reliability

The second reliability study objective was to determine the interrater reliability of the task factor data after removing divergent raters. Interrater reliability or R_{kk} was "high" in all three samples and the resulting reliability of any one rating scheme was not more reliable than the others. However, in achieving these high interrater reliabilities, six divergent raters were removed from the TD sample. This was significantly more than the single rater removed from the TLD sample and may indicate that the TD instructions produce more divergent raters.

CODAP GRPREL also has the capability to determine the minimum number of raters that would have been required to establish an R_{kk} of .90. In this study, only 26 TD, 23 TLD, and 19 TPD raters were necessary. Research, as previously mentioned, claims that under normal situations, survey administrators and analysts should budget for a minimum of 20 to 40 raters to ensure rater reliability. The three surveys averaged ratings of over 30 raters per task and easily met this requirement. But on a task level review, approximately 10 percent of the tasks were rated by less than 20 raters in the TD and TPD surveys. TLD respondents only fell below 20 raters on less than 5 percent of the tasks. As eluded to earlier, respondents are not always able to rate every task due to lack of task knowledge or perhaps lack of comfort with the rating scheme. This tendency for TLD sample to include more raters per task as well as less divergent raters per survey minimizes the chance that task factor data will be rejected due to an insufficient number of usable raters.

The TLD survey appears to be a more reliable method for collecting difficulty data. Ratings are more consistent, data have high interrater reliability, fewer divergent raters, and survey tasks have a tendency to be rated by a higher percentage of the raters. These results suggest that guidance and design of the TLD booklet results in the collection of more reliable data.

Relationships Between Task Factor Ratings

As expected, correlation analysis identified a relationship between task factor booklets. Unexpectedly, the correlations were "very high" with the smallest correlation between TD and TPD surveys and the largest between TLD and TPD surveys.

Nearly 80 percent of the TD variance could be explained by the TLD survey and approximately 77 percent could be explained by the TPD ratings. This was surprising since research and expert opinions suggested that the less specific "task difficulty" would consist of aspects of both learning and performance difficulty, with respondents inclining towards rating the performance aspect of difficulty. The lack of a significant difference between TD and TLD versus TD and TPD correlations did not confirm this line of thinking, suggesting maybe the brief reference to task learning difficulty which is included in TD survey instructions may have had some impact on the ratings.

Even more surprising is the significantly greater correlation between TLD and TPD than TD and TPD. Research (Burtch, Lipscomb, & Wissman, 1982; Christal, 1970, 1974; Lecznar, 1971; Madden, 1962; Mead, 1970a, 1970b; Weeks, 1981) has indicated the need to clarify and collect the learning aspect of difficulty because of both increased reliability and understanding and utility of the data. According to the correlational results, respondents rate learning and performance aspects of a task basically the same. Over 90 percent of the variance can be explained between TLD and TPD ratings. Since 10 percent is still unaccounted for, another approach was needed to assess the surveys. The following sections examine tasks which were rated differently under the three survey methods.

Task Factor Distributions

As an aid to the discussion, the practical applications of the survey results should be considered. In determining training and testing needs, USAFOMS advises career field subject matter experts to seriously evaluate tasks with ratings 1 or 2 standard deviations above the mean, i.e., high difficulty tasks, when making personnel management decisions. While tasks with mean ratings or lower should also be reviewed and discussed, tasks with ratings greater than 1 standard deviation below the mean can normally be disregarded. As shown in Table 7, 79 TD, 76 TLD, and 78 TPD tasks meet the high difficulty requirements.

Task Data Comparisons Across Survey Booklet

Of the tasks which were rated "high" on the different difficulty scales, 43 were common to all surveys. Of the remaining tasks, 10 tasks were common to only TD and TLD, 8 common to just TD and TPD, and 19 common to TLD and TPD. This left 19 unique TD tasks, 3 unique TLD tasks, and 9 unique TPD tasks. Following are lists of the unique tasks:

TD: A038 Prepare or submit recommendations for improving or standardizing ATC procedures

- B084 Supervise Air Traffic Control Automated Systems Programming Specialists (AFSC D272X0)
- B085 Supervise Air Traffic Control Managers (CEM 27200)
- B086 Supervise Air Traffic Control Operators (AFSC 27250)
- B088 Supervise Air Traffic Control Technicians (AFSC 27270)
- C097 Administer facility rating examinations or position certifications
- C101 Conduct staff assistance or site visits
- C102 Evaluate activity reports
- C103 Evaluate aircraft save requests
- C106 Evaluate ATC complaints
- C108 Evaluate ATC recommendations
- C118 Evaluate mission impact resulting from ATCALS deficiencies
- D160 Develop resident course curriculum materials
- E200 Prepare OIs
- H418 Authorize simultaneous opposite direction operations
- I442 Compute PAR voltages
- I448 Erect or tear down cantonment facilities
- I467 Plan aircraft loading or unloading
- I473 Review operation orders or plans

- TLD: D161 Direct or implement OJT programs
- I474 Set up disaster control facilities
- G362 Control timed approaches

- TPD: A007 Coordinate air traffic control (ATC) procedures for disaster control exercises with other agencies
- A018 Establish facility mission impact guidelines
- A029 Plan for ATC analysis visits
- B066 Implement cost-reduction programs
- B091 Supervise civilian personnel
- F265 Erect or tear down TRN-41 mobile tactical air navigation system (TACANs)
- G358 Control air traffic using oceanic procedures
- I468 Position mobile ATC equipment or support equipment
- J491 Maintain data bases for automated ATC systems

Several of the unique high TD and TPD tasks were characteristic of certain activities. Specifically, 13 of the 19 tasks or 68 percent of the unique TD tasks are supervisory or managerial activities from Duties A through D: (A: 1, B: 4, C: 7, D 1). Similarly, five of the 10, or 50 percent, of the unique TPD tasks are also supervisor and managerial duties.

Discussion with a subject matter expert noted tasks rated uniquely high by both TLD and TPD raters, especially those in Duty J were both difficult to learn and to perform. Whereas the tasks unique to TPD, F265 and I468 were relatively easier to learn but physically difficult or cumbersome to perform. These tasks in particular appear to be a variation of the "bolt in the plane" scenario in which the airman is taught that a certain task simply involves switching out black boxes in the plane but because the boxes were

bolted in the plane at an angle very difficult to reach, the task is considered difficult to perform. Similarly, the unique TLD tasks (G362, I474) were considered slightly more involved or harder to learn, but once understood fairly easy to accomplish.

The overlap between TLD and TPD high difficulty tasks is not as easily explained but may be a result of raters rating all and any aspects of difficulty. Of practical concern is the impact of applying these ratings in policy decisions. Specifically, several tasks which were considered difficult to learn, based on TLD ratings, were not captured under the current TD survey guidance as "highly" difficult. Several TD tasks, on the other hand, would have been recommended for inclusion in training and testing documents but are not difficult to learn based on the TLD ratings. This discrepancy is confirmed when tasks are examined by duties.

Task Data Comparisons Within Duty Areas

The survey data were divided into duty areas to examine interrater reliability by duties. In general, reliability was lower and a greater number of divergent raters removed from each duty sample. Importantly, the TLD raters maintained high reliability for five duties versus only four for TPD and two for TD. Further, while two duties had negligible reliability for TD and TPD, only one duty demonstrated poor reliability for TLD. At this more macro level of analysis, TLD again appears to be the more reliable of the rating methods.

Duty areas were placed in rank order of average task factor ratings. The result was a different rank order of duty areas for each difficulty factor. Whereas TD ratings suggest Duty B, Directing and Implementing, and Duty C, Inspecting and Evaluating, are the most difficult. TLD and TPD ratings indicate Duty J, Performing Air Traffic Control Data Programming Functions, and Duty I, Performing Mobile Operations, and Duty C are the most difficult. Duties B, C, I, and J were ranked in the top four duties by both TLD and TPD ratings. The differences with low difficulty levels are minimal with the three survey methods rank ordering Duties G, Performing Radar Functions, Duty H, Perform Control Tower Functions, and Duty F, Performing General Air Traffic Control Functions, as either 8, 9, or 10.

| | TD | TLD | TPD |
|----|----|-----|-----|
| 1 | B | J | J |
| 2 | C | I | C |
| 3 | D | C | B |
| 4 | J | B | I |
| 5 | E | D | A |
| 6 | I | E | D |
| 7 | A | A | E |
| 8 | G | G | G |
| 9 | H | H | F |
| 10 | F | F | H |

The standard deviations per duty area range from .18 (TPD Duty J) to 1.11 (TD Duty B). Most, however, are large enough to impact the rank order of tasks across duties. For example, a highly difficult TPD task in Duty B would rank higher than a highly difficult TPD task in Duty C. This was seen in the representation of several duties in the tasks considered highly difficult in Tables 8, 9, 10.

Comparison of duty area tasks was completed using a technique similar to the method used to compare tasks rated as high (M+1SD) for the three survey booklets. Since Duties B, C, J, and I were rated as the four most difficult duty areas, they were examined first. As shown in Table 13, a total of 17 TD task, 14 TLD tasks, and 14 TPD tasks were not rated as highly difficult by all three rating methods. Nine TD tasks, three TLD tasks, and five TPD tasks received an average rating of at least 1 standard deviation above the mean in the four duty areas by one rating method. Several tasks were common to only two rating methods. Specifically, six tasks were considered difficult by both TLD and TPD raters, five by TD and TLD raters, and three by TD and TPD raters. Review of these tasks or tasks rated as highly difficult by only one or two rating methods found that most were identified earlier in the Task Data Comparisons Across Survey Booklet section.

The unique tasks not identified in the survey level analysis include:

- TD: B087 Supervise Air traffic Control Superintendents (AFSC 27290)
- B093 Supervise Combat Control Operators (AFSC 27350)
- C107 Evaluate ATC problem areas
- I461 Operate site survey equipment
- J482 Build operational programs

- TLD: B055 Direct conventional air route traffic control activities
- B061 Direct radar air route traffic control activities

- TPD: B064 Direct tower instrument flight rules (IFR) approach control activities
- C132 Prepare enlisted performance reports (EPRs) or letters of evaluation (LOEs)
- C133 Prepare recommendations for awards or decorations
- I469 Prepare mission limiting factors
- J488 Configure EARTS hardware systems for operational needs

Since the managerial and supervisory type tasks are difficult to assess in reference to difficulty, only task I 469 and J488 were discussed with a SME. Both tasks were perceived to be more difficult to perform than to learn.

Finally, the least difficult duties were examined for similar trends. Relatively, Duty Areas F, G, and H were rank ordered as the lowest in difficulty, however several tasks within each duty were rated as highly difficult. Most tasks in all three duties were considered difficult by the three rating schemes. Of particular interest was the unique difficult tasks or tasks rated as difficult by only one method:

- TD: F321 Provide wake turbulence separations
- G393 Perform radar equipment turnaround procedures
- G401 Provide radar service for arrivals

- TLD:F217 Approve or coordinate aerial refueling operations
- F222 Approve or coordinate special visual flight rules (SVER) operations

- TPD:F212 Apply visual separations
- G355 Conduct military training route (MTR) operations
- G370 Implement air defense identification zone (ADIZ) procedures

Again, the differences could be explained by the nature of the task and its rating scheme for which it was rated difficult.

In general, results of duty level task comparisons supported the findings of the survey level task comparisons. TLD data had higher interrater reliability across duties and differences in unique tasks within duties were identified as related to the differences in rating schemes. Based on duty means and standard deviations, tasks rated high on learning difficulty were not captured using the current TD survey procedure. Since duty areas are not normally used by decision makers to identify training or testing needs, the practical implication of these differences is minimal. However, the results confirm the need to review historic data to determine if learning difficulty tasks have been omitted during the decision process or if high performance difficulty tasks which are captured under the current procedures were included.

Finally, the practical differences identified in this Air Force Specialty suggests further research is needed to investigate the impact of different difficulty instructions and survey format on task ratings on other specialties. Furthermore, the historical impact of implementing decisions based on tasks considered highly difficult under the current task difficulty collection procedures which includes tasks which were both difficult to learn and difficult to perform needs to be investigated.

Relationship Between Task Factors and Criterion Measures

The effort to use criterion measures to determine the rating logic of respondents and therefore the utility of the current task difficulty format as well as the proposed task learning difficulty survey format was not particularly successful. The relationship of the difficulty ratings with the three key criterion measures: percent time spent, senior time factors, and training emphasis ratings were moderate, were generally in the hypothesized directions, but were not significantly different between the three survey approaches.

Relationship with Percent Time Spent Criteria

Although past research was limited, Madden (1961) and McCauley, O'Leary, and Rheinstein (1991) found positive correlations between task difficulty and percent time spent performing. The current study analyses revealed that the more time individuals

spent on a task, the less difficult the task was rated under all three survey formats. A probable explanation of this phenomenon might be that in this career field, individuals spend a lot of time performing many tasks which with experience become perceived as simple or routine tasks. Examination of the raw data (see Appendix H) indicates that, in general, the high difficult tasks ($M + 1SD$) or tasks ranked higher than 79 for TD, 76 for TLD, and 78 for TPD were not performed by a high percentage of personnel. Of the top 25 tasks performed by the different paygrade groups, only two tasks received high difficulty ratings from each task factor survey.

Relationship with Percent Members Performing Criteria

The only criterion relationship in the study which somewhat supports the literature (Dittmar, Driskill, & Weismuller, 1987; Ruck, Thompson, & Stacy, 1987) was aspects of time. As demonstrated by the negative correlation between time spent performing and difficulty ratings and the significant difference in correlation of junior and senior time factors, the assumption that less experienced or junior personnel, based on paygrade, skill level, Total Active Federal Military Service (TAFMS), and Time in Career Field (TICF), spend more time on routine less difficult tasks holds true.

Apparently, while junior personnel spend less time on the more difficult tasks and more time on the less difficult tasks, senior personnel are spending a varying amount of time on tasks with varying degrees of difficulty. So while the basic hypothesis involving the difference in the relationship of task factor ratings to these time factors is still not fully supported, the nature of task difficulty rating was somewhat clarified.

Correlations with percent members performing data for the time groups did not add to an understanding of the task difficulty measures. In fact, the lack of significant differences between percent of junior and senior personnel performing tasks indicates that with the moderate correlation, fewer incumbents perform the high difficulty tasks regardless of experience or time in the military or career field. Since it was foreseeable that a curvilinear relationship might exist, a higher order regression analysis was conducted and R^2 computed, but there were no curvilinear relationships present.

Returning to the task-level comparison across duty areas, duties such as I and J as well as the supervisory and managerial functions were ranked as most difficult and are associated with the more experienced and senior personnel. On the other hand, general duties such as F, G, and H were ranked lowest and are primarily considered tasks performed by junior personnel. While the relationship was not significant, the task view approach supports the concept that more difficult tasks are performed by senior personnel. Unfortunately, no generalizations of this relationship can be drawn to explain the differences in the difficulty measures.

Relationship with Training Emphasis Criteria

The negative correlation proposed by Ruck et al. (1987) between training emphasis ratings of tasks performed by at least 30 percent of personnel in their first jobs (1-24 TAFMS) did not exist for this specialty. In fact, no relationship, positive or negative,

was found. Once again, examination of the rank order data (Appendix K) supports an earlier comment proposing that incumbents were not performing a sufficiently high percentage of difficult tasks to make any comparisons.

The lack of a clear relationship between task difficulty factors and the criterion measures and the strong correlations between the different measures of difficulty resulted in an inability to draw conclusions about training emphasis differences among the survey methods. Further research is necessary with emphasis on measuring difficult tasks performed by a significant number of personnel in a heterogeneous career field to address this issue.

Summary

The three major goals of this research were to increase the reliability of task difficulty data, determine if any differences exist between methods of data collection and identify content differences of the different task difficulty survey procedures. Results indicated that TLD measures were generally more reliable with a higher percentage of raters rating each task, a higher percentage of raters returning usable survey booklets, a lower number of divergent raters, and rating logic consistency. Differences between data collection methods were small but significant with a stronger relationship between TLD and TPD than with TD. The few differences in tasks rated high in difficulty were a result of the type of difficulty used for ratings. Criterion measures collected to validate the ratings provide somewhat inconclusive evidence of the reasons for differences among task difficulty survey methods. So most conclusions that the TLD provides a more accurate measure of the desired task difficulty are based on analyses of the obtained rating data.

The practical impact of these findings suggest that TLD data collection may be more efficient. The TLD procedures require smaller sample sizes, can provide higher reliabilities, yield fewer divergent raters, and result in a larger number of tasks being rated by each rater. Tasks rated high in learning difficulty are not necessarily captured under the current TD format. Advising training and aptitude standards setting personnel to key on the M+1SD tasks may result in poor decisions if the TD survey method was used to collect that data. The lack of a clear criterion to test the validity of difficulty measures creates problems in stating the full utility of the data for establishing personnel policies.

While further research is warranted, personnel at USAFOMS can revise the format of task difficulty surveys to include a new cover page, instructions, and scale headings to emphasize the learning aspect of task difficulty. These changes can be made with confidence that future data will be more reliable and that the validity will be the same, or greater, than data collected in the past.

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**APPENDIX A: AFSC 272X0 JOB INVENTORY (JI) BIOGRAPHICAL AND
BACKGROUND ITEMS**

- 1) Job Inventory Biographical Items**
- 2) Job Inventory Background Items**

JOB INVENTORY BIOGRAPHICAL ITEMS

Last Name, First Initial
Social Security Number
Phone Number
Sex
Grade
Title of Present Job

Number of People You Directly Supervise
Time in Present Job
Time In Career Field
Total Active Federal Military Service (TAFMS)

Primary AFSC
Duty AFSC
Converted AFSC

Organization To Which Assigned
Base To Which Assigned
Command To Which Assigned

JOB INVENTORY BIOGRAPHICAL ITEMS

Assigned in or outside the continental United States
Eligible to reenlist
Eligible for retirement
Job interest
Job utilize your talents
Job utilize your training
Satisfied with sense of accomplishment from work
Plan to reenlist
How assigned to present career ladder
Community College of the Air Force status
Work area where spend most time
Title of present position
Type of facility of present assignment
Formal courses completed
Control tower equipment operated in present job
Navigational aid remote status indicators used in present job
Radar equipment used in present job
Radio communication equipment used in present job
Forms used in present job

APPENDIX B: AFSC 272X0 TASK DIFFICULTY (TD) BOOKLET

- 1) TD Cover Page**
- 2) TD Instructions**
- 3) TD Scale Headings**



UNITED STATES AIR FORCE

TASK DIFFICULTY BOOKLET

AIR TRAFFIC CONTROL

AFSC 272X0

AFPT 90-272-978

JUNE 1992

**OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000**

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

INSTRUCTIONS FOR RATING TASK DIFFICULTY

As a senior technician, you have been selected to provide needed information pertaining to the difficulty of tasks performed in your career ladder. This information will be of value to the Air Force in the improvement of training, classification, and testing programs.

To obtain the maximum response possible, it is requested that you rate each task of which you have any knowledge. Rate those tasks you presently perform or supervise, those tasks which you have performed at a prior time in your career, and those tasks which you have observed or supervised being performed by others. Most personnel with your experience and background will be able to rate the majority of the tasks listed and, in many cases, to rate all of them. To accomplish this rating, follow the procedure listed below.

STEP 1. For this survey, task difficulty is defined as the amount of time needed to learn to do each task satisfactorily. To develop a frame of reference for rating task difficulty, scan the entire listing of tasks. Pick out some easy tasks and some difficult tasks. Then, select some tasks that fall between these extremes which are of average difficulty. Use those tasks at or near the middle of the range as a reference point for judging the difficulty of all tasks in the inventory. Use this frame of reference for completing STEP 2.

STEP 2. Estimate the task difficulty rating for each task compared with other tasks in this inventory. Use the scale shown here and at the top of each page to rate each task.

1. Extremely Low
2. Very Low
3. Low
4. Below Average
5. Average
6. Above Average
7. High
8. Very High
9. Extremely High

Begin with the first task in the booklet and give each task of which you have knowledge a difficulty rating from 1 to 9; record the value opposite the task statement in the column titled "TASK DIFFICULTY." Try to rate every task on each page. Remember (from STEP 1) that you are comparing each task with the other tasks in the career field.

STEP 3. Add any tasks you believe are performed by members of your specialty and are not covered by the booklet on the last page; then rate them.

STEP 4. Review the booklet to see that you have rated the DIFFICULTY OF ALL TASKS POSSIBLE. Each task can be given only one rating.

| TASK DIFFICULTY RATING | | AFSC | Page 1 of 24 Pages | |
|---|--|---|--------------------|----|
| INSTRUCTIONS | | TASK DIFFICULTY | | |
| Listed below are a duty and the tasks which it includes. Rate each task for difficulty based on time needed to learn to do the job. | | 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | | |
| A. ORGANIZING AND PLANNING | | XXXXXXXXXXXXXXXXXX | | |
| 1. Assign additional duties | | | | 5 |
| 2. Assign personnel to duty positions | | | | 6 |
| 3. Assign sponsors for newly assigned personnel | | | | 7 |
| 4. Coordinate air traffic control (ATC) procedures for disaster control exercises with other agencies | | | | 8 |
| 5. Coordinate aircraft control priorities with base flying authorities | | | | 9 |
| 6. Coordinate airlift operations with other agencies, such as command posts or airlift control centers (ALCCs) | | | | 10 |
| 7. Coordinate revisions for special operations with base flying authorities | | | | 11 |
| 8. Coordinate revisions for special operations with host nation or Federal Aviation Administration (FAA) agencies | | | | 12 |
| 9. Design map overlays | | | | 13 |
| 10. Determine requirements for space, personnel, equipment, or supplies | | | | 14 |
| 11. Determine work priorities | | | | 15 |
| 12. Develop facility reference charts | | | | 16 |
| 13. Develop organizational charts | | | | 17 |
| 14. Develop work methods or procedures | | | | 18 |
| 15. Draft budget or financial requirements | | | | 19 |
| 16. Establish dispersed controller programs | | | | 20 |
| 17. Establish facility documentation files | | | | 21 |
| 18. Establish facility mission impact guidelines | | | | 22 |
| 19. Establish local procedures for controlling flight check aircraft | | | | 23 |
| 20. Establish organizational policies, operating instructions (OIs), or standing operating procedures (SOPs) | | | | 24 |
| 21. Establish performance standards for subordinates | | | | 25 |
| 22. Establish priorities for restoring equipment | | | | 26 |
| 23. Establish procedures for controlling traffic between sectors or other facilities | | | | 27 |

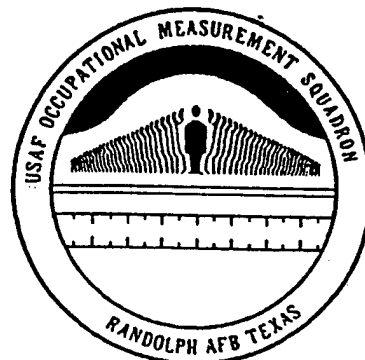
APPENDIX C: AFSC 272X0 TASK LEARNING DIFFICULTY (TLD) BOOKLET

- 1) TLD Cover Page
- 2) TLD Instructions
- 3) TLD Scale Headings

*This
should be
page 65
(Don't know
how to change
it on
digital copy)*



**UNITED STATES
AIR FORCE**



TASK LEARNING DIFFICULTY

AIR TRAFFIC CONTROL

AFSC 272X0

AFPT 90-272-978

JUNE 1992

**OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000**

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

INSTRUCTIONS FOR RATING TASK LEARNING DIFFICULTY

As a senior technician, you have been selected to provide needed information pertaining to the difficulty of tasks performed in your career ladder. This information will be of value to the Air Force in the improvement of training, classification, and testing programs. To accomplish this rating, follow the procedure listed below.

NOTE: To obtain the maximum response possible, it is requested that you rate each task of which you have any knowledge. Rate those tasks you presently perform or supervise, those tasks which you have performed at a prior time in your career, and those tasks which you have observed or supervised while being performed by others. Most personnel with your experience and background will be able to rate the majority of the tasks listed and in many cases to rate all of them.

STEP 1. Develop a frame of reference for rating task learning difficulty. For this survey, task learning difficulty is defined as the amount of time needed to learn to do each task satisfactorily. To develop a frame of reference, scan the entire listing. Pick out some easy tasks and some difficult tasks. Then, find some tasks which fall between these extremes that are of average difficulty. Use these tasks at or near the middle of the range as a reference point for judging the learning difficulty of all tasks in the inventory. This frame of reference will be used for completing STEP 2.

STEP 2. Estimate the task learning difficulty rating for each task compared with other tasks in this inventory. Use the scale shown here and at the top of each page to rate each task.

1. Extremely Low
2. Very Low
3. Low
4. Below Average
5. Average
6. Above Average
7. High
8. Very High
9. Extremely High

Begin with the first task in the booklet and give each task of which you have knowledge a learning difficulty rating from 1 to 9; record the value opposite the task statement in the column titled "TASK LEARNING DIFFICULTY." Try to rate every task on each page. Remember (from STEP 1) that you are comparing each task with the other tasks in the career field.

STEP 3. The last page of the booklet is available to add any tasks you do now which are not listed. Your constructive suggestions in improving the job inventory will be useful.

STEP 4. Review the booklet to see that you have rated the LEARNING DIFFICULTY of all tasks possible. Each task can be given only one rating.

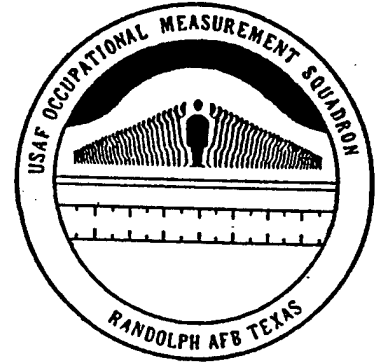
| TASK LEARNING DIFFICULTY RATING | | AFSC 272X0 | Page 1 of 24 Pages |
|---|--|--|--------------------|
| INSTRUCTIONS Listed below are a duty and the tasks which it includes. Rate each task for learning difficulty based on time needed to learn to do the job. | | TASK LEARNING DIFFICULTY 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | |
| A. ORGANIZING AND PLANNING | | XXXXXXXXXXXXXXXXXXXX | |
| 1. Assign additional duties | | | 5 |
| 2. Assign personnel to duty positions | | | 6 |
| 3. Assign sponsors for newly assigned personnel | | | 7 |
| 4. Coordinate air traffic control (ATC) procedures for disaster control exercises with other agencies | | | 8 |
| 5. Coordinate aircraft control priorities with base flying authorities | | | 9 |
| 6. Coordinate airlift operations with other agencies, such as command posts or airlift control centers (ALCCs) | | | 10 |
| 7. Coordinate revisions for special operations with base flying authorities | | | 11 |
| 8. Coordinate revisions for special operations with host nation or Federal Aviation Administration (FAA) agencies | | | 12 |
| 9. Design map overlays | | | 13 |
| 10. Determine requirements for space, personnel, equipment, or supplies | | | 14 |
| 11. Determine work priorities | | | 15 |
| 12. Develop facility reference charts | | | 16 |
| 13. Develop organizational charts | | | 17 |
| 14. Develop work methods or procedures | | | 18 |
| 15. Draft budget or financial requirements | | | 19 |
| 16. Establish dispersed controller programs | | | 20 |
| 17. Establish facility documentation files | | | 21 |
| 18. Establish facility mission impact guidelines | | | 22 |
| 19. Establish local procedures for controlling flight check aircraft | | | 23 |
| 20. Establish organizational policies, operating instructions (OIs), or standing operating procedures (SOPs) | | | 24 |
| 21. Establish performance standards for subordinates | | | 25 |
| 22. Establish priorities for restoring equipment | | | 26 |
| 23. Establish procedures for controlling traffic between sectors or other facilities | | | 27 |

APPENDIX D: AFSC 272X0 TASK PERFORMANCE DIFFICULTY (TPD) BOOKLET

- 1) TPD Cover Page**
- 2) TPD Instructions and Scale Heading**



**UNITED STATES
AIR FORCE**



TASK PERFORMANCE DIFFICULTY

AIR TRAFFIC CONTROL

AFSC 272X0

AFPT 90-272-978

JUNE 1992

**OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000**

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

INSTRUCTIONS FOR RATING TASK PERFORMANCE DIFFICULTY

As a senior technician, you have been selected to provide needed information pertaining to the difficulty of tasks performed in your career ladder. This information will be of value to the Air Force in the improvement of training, classification, and testing programs. To accomplish this rating, follow the procedure listed below.

NOTE: To obtain the maximum response possible, it is requested that you rate each task of which you have any knowledge. Rate those tasks you presently perform or supervise, those tasks which you have performed at a prior time in your career, and those tasks which you have observed or supervised while being performed by others. Most personnel with your experience and background will be able to rate the majority of the tasks listed and in many cases to rate all of them.

STEP 1. Develop a frame of reference for rating task performance difficulty. To develop a frame of reference, scan the entire listing of tasks. Pick out some easy tasks and some difficult tasks. Then, find some tasks which fall between these extremes that are of average difficulty. Use these tasks at or near the middle of the range as a reference point for judging the performance difficulty of all tasks in the inventory. This frame of reference will be used for completing STEP 2.

STEP 2. Estimate the task performance difficulty rating for each task compared with other tasks in this inventory. Use the scale shown here and at the top of each page to rate each task.

1. Extremely Low
2. Very Low
3. Low
4. Below Average
5. Average
6. Above Average
7. High
8. Very High
9. Extremely High

Begin with the first task in the booklet and give each task of which you have knowledge a performance difficulty rating from 1 to 9; record the value opposite the task statement in the column titled "TASK PERFORMANCE DIFFICULTY." Try to rate every task on each page. Remember (from STEP 1) that you are comparing each task with the other tasks in the career field.

STEP 3. The last page of the booklet is available to add any tasks you do now which are not listed. Your constructive suggestions in improving the job inventory will be useful.

STEP 4. Review the booklet to see that you have rated the PERFORMANCE DIFFICULTY of all tasks possible. Each task can be given only one rating.

APPENDIX E: EXAMPLE OF DUPLICATE PAGE SETUP

- 1) AFSC 272X0 TPD Page 10
- 2) AFSC 272X0 TPD Page 11
- 3) AFSC 272X0 TPD Page 12
- 4) AFSC 272X0 TPD Page 13
- 5) AFSC 272X0 TPD Page 11
- 6) AFSC 272X0 TPD Page 14

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC 272X0 | Page 10 of 24 Pages | |
|---|---|---------------|---|----|
| INSTRUCTIONS | | | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | | 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | |
| F. PERFORMING GENERAL AIR TRAFFIC CONTROL FUNCTIONS | | | XXXXXXXXXXXXXXXXXX | |
| 206. | Activate back-up communications systems | | | 72 |
| 207. | Adjust radar scopes | | 07: | 73 |
| 208. | Annotate and update flight progress strips | | | 5 |
| 209. | Apply military assumes responsibility for separation of aircraft (MARSA) procedures | | | 6 |
| 210. | Apply mode-c veil procedures | | | 7 |
| 211. | Apply nonradar separation procedures | | | 8 |
| 212. | Apply visual separations | | | 9 |
| 213. | Approve aircraft operations in airport radar surveillance areas (ARSAs) | | | 10 |
| 214. | Approve aircraft operations in airport traffic areas (ATAs) | | | 11 |
| 215. | Approve aircraft operations in control zones (CZs) | | | 12 |
| 216. | Approve aircraft operations in terminal control areas (TCAs) | | | 13 |
| 217. | Approve or coordinate aerial refueling operations | | | 14 |
| 218. | Approve or coordinate aircraft operations in warning or restricted areas | | | 15 |
| 219. | Approve or coordinate enroute altitude reservations | | | 16 |
| 220. | Approve or coordinate IFR aircraft departures | | | 17 |
| 221. | Approve or coordinate pilot requests for deviations from ATC clearances | | | 18 |
| 222. | Approve or coordinate special visual flight rules (SVFR) operations | | | 19 |
| 223. | Approve or disapprove flight join-ups | | | 20 |
| 224. | Approve parachute, drop zone, or airdrop operations | | | 21 |
| 225. | Approve pilot and supervisor of flying (SOF) communications interruptions | | | 22 |
| 226. | Approve pilots' request to conduct unusual maneuvers | | | 23 |
| 227. | Assign frequencies to aircraft | | | 24 |
| 228. | Assign transponder modes or codes | | | 25 |

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC | Page 11 of 24 Pages | |
|---|--|-------|-----------------------------|----|
| INSTRUCTIONS | | 272X0 | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | | 1. Extremely Low | |
| | | | 2. Very Low | |
| | | | 3. Low | |
| | | | 4. Below Average | |
| | | | 5. Average | |
| | | | 6. Above Average | |
| | | | 7. High | |
| | | | 8. Very High | |
| | | | 9. Extremely High | |
| 229. Authorize or control circling maneuvers | | | | 26 |
| 230. Calculate lowest usable flight levels | | | | 27 |
| 231. Clean work areas or equipment | | | | 28 |
| 232. Complete preduty equipment checklists | | | | 29 |
| 233. Conduct alternate facility procedures | | | | 30 |
| 234. Conduct briefings on ATC equipment | | | | 31 |
| 235. Conduct briefings on ATC operations | | | | 32 |
| 236. Conduct communication-out procedures | | | | 33 |
| 237. Conduct procedures for opening or closing runways | | | | 34 |
| 238. Confirm aircraft altitudes | | | | 35 |
| 239. Control aircraft with hot gun or hung ordnance | | | | 36 |
| 240. Control no-radio (NORDO) aircraft | | | | 37 |
| 241. Control practice precautionary approaches | | | | 38 |
| 242. Control receiver-only aircraft | | | | 39 |
| 243. Coordinate aircraft handoffs | | | | 40 |
| 244. Coordinate allied altitude reservation requests | | | | 41 |
| 245. Coordinate altitude reservation conflicts | | | | 42 |
| 246. Coordinate hazardous cargo operations | | | | 43 |
| 247. Coordinate or control aircraft surge launch and recovery (ASLAR) operations | | | | 44 |
| 248. Coordinate or control priority missions | | | | 45 |
| 249. Coordinate or control special tactical missions | | | | 46 |
| 250. Coordinate or relay SOF requests | | | | 47 |
| 251. Coordinate search and rescue operations | | | | 48 |
| 252. Coordinate status of ATC facilities with other agencies | | | | 49 |

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC 272X0 | Page 12 of 24 Pages |
|---|--|---|---------------------|
| INSTRUCTIONS | | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | |
| 253. | Coordinate use of airspace with other agencies or facilities | | 50 |
| 254. | Coordinate video map alignments | | 51 |
| 255. | Copy or issue airfield advisories | | 52 |
| 256. | Copy or issue field operating conditions | | 53 |
| 257. | Copy or issue meteorological aviation report (METAR) weather reports | | 54 |
| 258. | Copy or relay standard weather observations | | 55 |
| 259. | Copy or transmit enroute clearances using FAA or International Civil Aviation Organization (ICAO) procedures | | 56 |
| 260. | Copy or transmit enroute clearances using host-nation agreement procedures | | 57 |
| 261. | Determine aircraft positions using nonradar procedures | | 58 |
| 262. | Direct or vector aircraft to external store jettison areas | | 59 |
| 263. | Direct or vector aircraft to fuel dumping areas | | 60 |
| 264. | Direct or vector emergency aircraft to alternate airports | | 61 |
| 265. | Erect or tear down TRN-41 mobile tactical air navigation systems (TACANs) | | 62 |
| 266. | Extract information from transmitted flight plans | | 63 |
| 267. | File flight progress strips | | 64 |
| 268. | Formulate IFR clearances | | 65 |
| 269. | Hold arriving VFR aircraft at visual fixes | | 66 |
| 270. | Inform agencies of observed unusual events or incidents | | 67 |
| 271. | Initiate antihijacking procedures | | 68 |
| 272. | Initiate emergency assistance procedures | | 69 |
| 273. | Initiate emergency handling procedures for special operations | | 70 |
| 274. | Initiate requests for control of airspace from other facilities | | 71 |
| 275. | Initiate special control actions for communist aircraft flights | | 72 |
| 276. | Issue advance approach information to arriving aircraft | 08: | 73 |

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC 272X0 | Page 13 of 24 Pages |
|---|--|---|---------------------|
| INSTRUCTIONS | | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | |
| 277. Issue aircraft in-flight fuel dumping advisories | | | 5 |
| 278. Issue aircraft speed adjustments | | | 6 |
| 279. Issue alternate clearances | | | 7 |
| 280. Issue altimeter settings | | | 8 |
| 281. Issue altitude assignments | | | 9 |
| 282. Issue bird advisories | | | 10 |
| 283. Issue clearance void times | | | 11 |
| 284. Issue go-around instructions | | | 12 |
| 285. Issue IFR holding instructions | | | 13 |
| 286. Issue low-altitude alerts | | | 14 |
| 287. Issue missed approach instructions | | | 15 |
| 288. Issue traffic advisories | | | 16 |
| 289. Issue wake turbulence advisories | | | 17 |
| 290. Issue warning area advisories | | | 18 |
| 291. Issue weather advisories | | | 19 |
| 292. Issue wheels down advisories | | | 20 |
| 293. Issue wind advisories | | | 21 |
| 294. Make time checks | | | 22 |
| 295. Monitor assigned frequencies | | | 23 |
| 296. Notify agencies of runways in use | | | 24 |
| 297. Operate generators | | | 25 |
| 298. Operate landlines | | | 26 |
| 299. Operate or check remote status indicators | | | 27 |
| 300. Operate or check time announcers | | | 28 |

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC 272X0 | Page 11 of 24 Pages |
|---|--|---|---------------------|
| INSTRUCTIONS | | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | 1. Extremely Low 2. Very Low 3. Low 4. Below Average 5. Average 6. Above Average 7. High 8. Very High 9. Extremely High | |
| 229. Authorize or control circling maneuvers | | | 26 |
| 230. Calculate lowest usable flight levels | | | 27 |
| 231. Clean work areas or equipment | | | 28 |
| 232. Complete preduty equipment checklists | | | 29 |
| 233. Conduct alternate facility procedures | | | 30 |
| 234. Conduct briefings on ATC equipment | | | 31 |
| 235. Conduct briefings on ATC operations | | | 32 |
| 236. Conduct communication-out procedures | | | 33 |
| 237. Conduct procedures for opening or closing runways | | | 34 |
| 238. Confirm aircraft altitudes | | | 35 |
| 239. Control aircraft with hot gun or hung ordnance | | | 36 |
| 240. Control no-radio (NORDO) aircraft | | | 37 |
| 241. Control practice precautionary approaches | | | 38 |
| 242. Control receiver-only aircraft | | | 39 |
| 243. Coordinate aircraft handoffs | | | 40 |
| 244. Coordinate allied altitude reservation requests | | | 41 |
| 245. Coordinate altitude reservation conflicts | | | 42 |
| 246. Coordinate hazardous cargo operations | | | 43 |
| 247. Coordinate or control aircraft surge launch and recovery (ASLAR) operations | | | 44 |
| 248. Coordinate or control priority missions | | | 45 |
| 249. Coordinate or control special tactical missions | | | 46 |
| 250. Coordinate or relay SOF requests | | | 47 |
| 251. Coordinate search and rescue operations | | | 48 |
| 252. Coordinate status of ATC facilities with other agencies | | | 49 |

| TASK PERFORMANCE DIFFICULTY RATING | | AFSC 272X0 | Page 14 of 24 Pages |
|---|--|-----------------------------|---------------------|
| INSTRUCTIONS | | TASK PERFORMANCE DIFFICULTY | |
| Listed below are a duty and the tasks which it includes. Rate each task for performance difficulty. | | 1. Extremely Low | |
| | | 2. Very Low | |
| | | 3. Low | |
| | | 4. Below Average | |
| | | 5. Average | |
| | | 6. Above Average | |
| | | 7. High | |
| | | 8. Very High | |
| | | 9. Extremely High | |
| 301. Operate or check voice recorders | | | 29 |
| 302. Operationally check automatic terminal information services (ATIS) | | | 30 |
| 303. Participate in preduty familiarization briefings | | | 31 |
| 304. Participate in simulated crash, alert, or disaster control exercises | | | 32 |
| 305. Perform interfacility coordinations | | | 33 |
| 306. Perform intrafacility coordinations | | | 34 |
| 307. Perform meaconing, interference, jamming, and intrusion (MIJI) procedures | | | 35 |
| 308. Perform radar beacon checks | | | 36 |
| 309. Plot altitude reservations | | | 37 |
| 310. Practice facility evacuation procedures | | | 38 |
| 311. Practice security control of air traffic and air navigation aid (SCATANA) procedures | | | 39 |
| 312. Prepare altitude reservation requests | | | 40 |
| 313. Prepare ATIS messages for transmissions | | | 41 |
| 314. Prepare video maps | | | 42 |
| 315. Process airspace reservation amendment delays or cancellations | | | 43 |
| 316. Process ATCALS decommissioning messages | | | 44 |
| 317. Provide or coordinate special controls for air defense intercept missions | | | 45 |
| 318. Provide special handling for aircraft NAVAID flight inspections | | | 46 |
| 319. Provide special handling for special operations aircraft | | | 47 |
| 320. Provide special handling for very important persons (VIPs) or coded aircraft | | | 48 |
| 321. Provide wake turbulence separations | | | 49 |
| 322. Receive or relay enroute air traffic movement information | | | 50 |
| 323. Regulate flow of traffic between sectors or facilities | | | 51 |
| 324. Relay aircraft arrival or departure times | | | 52 |

APPENDIX F: AFSC 272X0 TASK LIST

INSTRUCTIONS FOR COMPLETING THE DUTY-TASK SECTION

READ THIS PAGE BEFORE GOING FURTHER

Have you completed the Background Information Section?
Make sure, before you continue with this procedure.

PROCEDURE A. CHECKING TASKS OF PRESENT JOB

1. As you read each task in the Duty-Task section, place a check beside each task you perform in your present job. Do not mark tasks you have performed in previous jobs, or tasks you feel you are qualified to perform. Do not confuse work you do yourself with work you supervise. Mark only those tasks you actually perform in your present job. Put your check mark in the column headed "Check-If Done Now". When you have checked ALL tasks performed in your present job, return to this page and follow "Procedure B" below.
2. DO NOT COMPLETE THE RIGHT-HAND COLUMN AT THIS TIME.
3. If a task you perform is not listed anywhere in the entire list, add it on the "Write-In Comments" page at the back of this booklet. Do not add tasks that are classified.
4. Remember, at this time you are to complete only the column headed "Check-If Done Now". Please go to the next page and begin checking those tasks you perform in your present job.

PROCEDURE B. RATING TIME SPENT ON TASKS IN PRESENT JOB

1. Have you checked each task you perform in your present job? Make sure, before you continue with this procedure.
2. Now you are to rate the relative amount of time you spend performing each task in your present job. Relative time spent means the total time you spend doing the task compared with the time you spend on each of the other tasks of your present job.
3. Use a rating of "1" if you spend a "very small amount" of time on a task. Use a rating of "2" for "much below average" time, and so on, up to a rating of "9" if you spend a "very large amount" of time on the task.
4. Remember, you are to rate only those tasks that you have already checked in the "Check-If Done Now" column.
5. Place your rating, according to the 9-point scale, in the right-hand column headed "Time Spent Present Job" by blackening the appropriate circle. When marking your responses, care should be taken not to overlap into other ovals on the same line.

FIGURE 1
Right Way



FIGURE 2
Wrong Way



6. When you have completed all your ratings in the right-hand column, you will have completed this USAF Job Inventory and you may turn it in to your Occupational Survey Control Officer.
7. Now, go to the next page and begin rating the "Time Spent" on those tasks you checked previously.

- | TIME SPENT
IN PRESENT JOB | |
|------------------------------|-----------------------|
| 1. VERY SMALL AMOUNT | 8. VERY LARGE |
| 2. SMALLER AMOUNT | 9. MUCH ABOVE AVERAGE |
| 3. BELOW AVERAGE | 10. ABOVE AVERAGE |
| 4. BELOW AVERAGE | 11. ABOVE AVERAGE |
| 5. BELOW AVERAGE | 12. ABOVE AVERAGE |
| 6. BELOW AVERAGE | 13. ABOVE AVERAGE |
| 7. BELOW AVERAGE | 14. ABOVE AVERAGE |
- CHECK (✓) IF DONE NOW

3. ORGANIZING AND PLANNING

1. Assign additional duties
2. Assign personnel to duty positions
3. Assign sponsors for newly assigned personnel
4. Coordinate air traffic control (ATC) procedures for disaster control exercises with other agencies
5. Coordinate aircraft control priorities with base flying authorities
6. Coordinate airlift operations with other agencies, such as command posts or airlift control centers (ALCCs)
7. Coordinate revisions for special operations with base flying authorities
8. Coordinate revisions for special operations with host nation or Federal Aviation Administration (FAA) agencies
9. Design map overlays
10. Determine requirements for space, personnel, equipment, or supplies
11. Determine work priorities
12. Develop facility reference charts
13. Develop organizational charts
14. Develop work methods or procedures
15. Draft budget or financial requirements
16. Establish dispersed controller programs
17. Establish facility documentation files
18. Establish facility mission impact guidelines
19. Establish local procedures for controlling flight check aircraft
20. Establish organizational policies, operating instructions (OIs), or standing operating procedures (SOPs)
21. Establish performance standards for subordinates
22. Establish priorities for restoring equipment
23. Establish procedures for controlling traffic between sectors or other facilities
24. Establish procedures for notifying other agencies of equipment failures
25. Establish publication libraries
26. Plan briefings
27. Plan duty schedules
28. Plan facility equipment layouts
29. Plan for ATC analysis visits
30. Plan layouts of facilities
31. Plan safety programs
32. Plan security programs
33. Plan staff assistance or site visits
34. Plan work assignments
35. Prepare facility checklists
36. Prepare job descriptions
37. Prepare minimum vectoring altitude (MVA) charts
38. Prepare or submit recommendations for improving or standardizing ATC procedures
39. Prepare recommendations for changes to ATC and landing systems (ATCALSS)
40. Prepare requests for unit detail listing (UDL) changes
41. Prepare unit emergency plans
42. Prepare work requests to base service organizations

[illegible]

DUTY-TASK SECTION

| | TIME SPENT IN PRESENT JOB | | | | | | | |
|--|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | |
| | 1 VERY SLOW | 2 SLOW | 3 BELOW AVERAGE | 4 AVERAGE | 5 ABOVE AVERAGE | 6 VERY FAST | 7 EXCELLENT | 8 PERFECT |
| 1. CHECK tasks you perform now. | | | | | | | | |
| 2. If you DON'T do it, DON'T check it. | | | | | | | | |
| 3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it. | | | | | | | | |
| 43. Schedule ATC meetings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44. Schedule briefings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45. Schedule flight physicals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46. Schedule leaves or passes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 47. Schedule navigational aid (NAVAID) flight checks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| B. DIRECTING AND IMPLEMENTING | | | | | | | | |
| 48. Approve electrical power transfers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 49. Conduct briefings for newly assigned pilots on ATC policies or procedures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 50. Conduct exercise and contingency briefings to aircrews on local ATC policies or procedures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 51. Conduct facility tours | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 52. Conduct staff briefings on status of ATCALSs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 53. Conduct staff meetings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 54. Counsel personnel on personal or military-related problems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 55. Direct conventional air route traffic control activities (ARTCCs) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 56. Direct development or maintenance of status boards, graphs, or charts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 57. Direct ground controlled approach (GCA) activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 58. Direct maintenance of administrative files | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 59. Direct nonradar approach control activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 60. Direct procedures for performing equipment checks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 61. Direct radar air route traffic control activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 62. Direct radar approach control (RAPCON) activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 63. Direct radar final approach control activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 64. Direct tower instrument flight rules (IFR) approach control activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 65. Direct tower visual flight rules (VFR) control activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 66. Implement cost-reduction programs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 67. Implement safety programs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 68. Implement security programs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 69. Implement suggestion programs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 70. Initiate corrective actions based on inspection deficiency reports | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 71. Initiate personnel action requests | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 72. Interpret ATC policies for using activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 73. Interpret policies, directives, or procedures for subordinates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 74. Maintain ATC liaison with foreign nationals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 75. Maintain ATC liaison with other United States agencies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 76. Maintain contingency plans | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 77. Post duty schedules | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 78. Prepare or submit recommendations for changes to ATC publications, other than base | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 79. Prepare or submit recommendations for changes to base ATC publications | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 80. Prepare or submit terminal instrument procedures (TERPS) packages | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 81. Review TERPS packages | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 82. Revise facility equipment layouts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 83. Submit changes to flight information publications (FLIP) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 84. Supervise Air Traffic Control Automated Systems Programming Specialists (AFSC D272X0) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

DUTY-TASK SECTION

1. CHECK tasks you perform now.
2. If you DON'T do it, DON'T check it.
3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.

| TIME SPENT IN PRESENT JOB | | | | | | | | | |
|------------------------------|----------------------|-----------------|--------------------|--------------------------|-----------------|----------------------|---------------------|-------------------|-------------------|
| CHECK (✓) IF DONE NOW | 1. VERY SMALL AMOUNT | 2. SMALL AMOUNT | 3. MODERATE AMOUNT | 4. SOMEWHAT LARGE AMOUNT | 5. LARGE AMOUNT | 6. VERY LARGE AMOUNT | 7. EXCESSIVE AMOUNT | 8. UNUSUAL AMOUNT | 9. EXTREME AMOUNT |

| | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|
| 85. Supervise Air Traffic Control Managers (CEM 27200) | | | | | | | | | |
| 86. Supervise Air Traffic Control Operators (AFSC 27250) | | | | | | | | | |
| 87. Supervise Air Traffic Control Superintendents (AFSC 27290) | | | | | | | | | |
| 88. Supervise Air Traffic Control Technicians (AFSC 27270) | | | | | | | | | |
| 89. Supervise Apprentice Air Traffic Control Operators (AFSC 27230) | | | | | | | | | |
| 90. Supervise Apprentice Combat Control Operators (AFSC 27330) | | | | | | | | | |
| 91. Supervise civilian personnel | | | | | | | | | |
| 92. Supervise Combat Control Operators (AFSC 27350) | | | | | | | | | |
| 93. Supervise Combat Control Technicians (AFSC 27370) | | | | | | | | | |
| 94. Supervise foreign nationals | | | | | | | | | |
| 95. Supervise military personnel with AFSCs other than 272X0 | | | | | | | | | |
| 96. Write general correspondence | | | | | | | | | |

C. INSPECTING AND EVALUATING

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| 97. Administer facility rating examinations or position certifications | | | | | | | | | |
| 98. Conduct ATC analysis visits | | | | | | | | | |
| 99. Conduct ATC facility self-inspections | | | | | | | | | |
| 100. Conduct on-the-job performance evaluations of air traffic controllers | | | | | | | | | |
| 101. Conduct staff assistance or site visits | | | | | | | | | |
| 102. Evaluate activity reports | | | | | | | | | |
| 103. Evaluate aircraft save requests | | | | | | | | | |
| 104. Evaluate ATC complaints | | | | | | | | | |
| 105. Evaluate ATC methods or techniques | | | | | | | | | |
| 106. Evaluate ATC operations reports | | | | | | | | | |
| 107. Evaluate ATC problem areas | | | | | | | | | |
| 108. Evaluate ATC recommendations | | | | | | | | | |
| 109. Evaluate ATC voice-recorder tapes pertaining to aircraft accidents or incidents | | | | | | | | | |
| 110. Evaluate ATC withdraw packages | | | | | | | | | |
| 111. Evaluate budget or financial requirements | | | | | | | | | |
| 112. Evaluate individuals for promotion, demotion, or reclassification | | | | | | | | | |
| 113. Evaluate inspection reports or procedures | | | | | | | | | |
| 114. Evaluate job descriptions | | | | | | | | | |
| 115. Evaluate letters of agreement (LOAs) | | | | | | | | | |
| 116. Evaluate maintenance or use of workspace, equipment, or supplies | | | | | | | | | |
| 117. Evaluate memorandums of understanding (MOUs) | | | | | | | | | |
| 118. Evaluate mission impact resulting from ATCALS deficiencies | | | | | | | | | |
| 119. Evaluate OIs | | | | | | | | | |
| 120. Evaluate operations letters | | | | | | | | | |
| 121. Evaluate procedures for storage, inventory, or inspection of property items | | | | | | | | | |
| 122. Evaluate safety programs | | | | | | | | | |
| 123. Evaluate security programs | | | | | | | | | |
| 124. Evaluate suggestions | | | | | | | | | |
| 125. Evaluate unit emergency plans | | | | | | | | | |
| 126. Evaluate work schedules | | | | | | | | | |
| 127. Evaluate workload requirements | | | | | | | | | |
| 128. Implement task qualification training (TOT) reports | | | | | | | | | |

DUTY-TASK SECTION

| | TIME SPENT IN PRESENT JOB | | | | | | | | | |
|--|------------------------------|----------------------|------------------|------------------|------------------|---------------|--------------|--------------|--------------|--------------|
| <p>1. CHECK tasks you perform now.</p> <p>2. If you DON'T do it, DON'T check it.</p> <p>3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.</p> | CHECK (✓) IF DONE NOW | 1. VERY SMALL AMOUNT | 2. BELOW AVERAGE | 3. ABOUT AVERAGE | 4. ABOVE AVERAGE | 5. VERY LARGE | 6. NOT RATED | 7. NOT RATED | 8. NOT RATED | 9. NOT RATED |
| 129. Inventory equipment, tools, or supplies, other than mobile equipment, tools, or supplies | | | | | | | | | | |
| 130. Investigate accidents or incidents, other than aircraft accidents or incidents | | | | | | | | | | |
| 131. Investigate aircraft accidents or incidents | | | | | | | | | | |
| 132. Prepare enlisted performance reports (EPRs) or letters of evaluation (LOEs) | | | | | | | | | | |
| 133. Prepare recommendations for awards or decorations | | | | | | | | | | |
| 134. Write civilian performance ratings or supervisory appraisals | | | | | | | | | | |
| 135. Write staff studies, surveys, or special reports | | | | | | | | | | |
| D. TRAINING | | | | | | | | | | |
| 136. Administer tests | | | | | | | | | | |
| 137. Assign on-the-job training (OJT) trainers | | | | | | | | | | |
| 138. Assign resident course instructors | | | | | | | | | | |
| 139. Conduct Air National Guard or Air Force Reserves ATC training | | | | | | | | | | |
| 140. Conduct air route traffic control center proficiency training | | | | | | | | | | |
| 141. Conduct ATC exercises | | | | | | | | | | |
| 142. Conduct ATC training for civilian personnel | | | | | | | | | | |
| 143. Conduct ATC training for foreign nationals | | | | | | | | | | |
| 144. Conduct ATCALS equipment training | | | | | | | | | | |
| 145. Conduct briefings on new training techniques | | | | | | | | | | |
| 146. Conduct control tower proficiency training | | | | | | | | | | |
| 147. Conduct facility rating training | | | | | | | | | | |
| 148. Conduct ground control approach (GCA) proficiency training | | | | | | | | | | |
| 149. Conduct M-series vehicle training | | | | | | | | | | |
| 150. Conduct OJT | | | | | | | | | | |
| 151. Conduct radar final control proficiency training | | | | | | | | | | |
| 152. Conduct RAPCON proficiency training | | | | | | | | | | |
| 153. Conduct resident course training | | | | | | | | | | |
| 154. Conduct TERPS specialist training | | | | | | | | | | |
| 155. Counsel trainees on training progress | | | | | | | | | | |
| 156. Demonstrate how to locate technical information | | | | | | | | | | |
| 157. Determine resident course training requirements | | | | | | | | | | |
| 158. Develop job qualification standards (JQSs) | | | | | | | | | | |
| 159. Develop JQS training references | | | | | | | | | | |
| 160. Develop resident course curriculum materials | | | | | | | | | | |
| 161. Direct or implement OJT programs | | | | | | | | | | |
| 162. Direct or implement training programs, other than OJT | | | | | | | | | | |
| 163. Establish indoctrination programs for newly assigned personnel | | | | | | | | | | |
| 164. Establish study reference files | | | | | | | | | | |
| 165. Establish unit training requirements | | | | | | | | | | |
| 166. Evaluate individuals for specialized training | | | | | | | | | | |
| 167. Evaluate OJT trainers | | | | | | | | | | |
| 168. Evaluate progress of resident course students | | | | | | | | | | |
| 169. Evaluate training methods or techniques | | | | | | | | | | |
| 170. Maintain training records, charts, or graphs | | | | | | | | | | |
| 171. Operate maintenance management information and control system (MMICS) terminals | | | | | | | | | | |
| 172. Participate in USAF graduate evaluation programs | | | | | | | | | | |

DUTY-TASK SECTION

1. CHECK tasks you perform now.
2. If you DON'T do it, DON'T check it.
3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.

[illegible]

DUTY-TASK SECTION

| <p>1. CHECK tasks you perform now.</p> <p>2. If you DON'T do it, DON'T check it.</p> <p>3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.</p> | TIME SPENT IN PRESENT JOB | | | | | | | | | |
|--|------------------------------|----------------------|-----------------------|-----------------------|-----------------------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|-------------------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | | | |
| | 1 VERY SMALL AMOUNT | 2 SMALL AMOUNT | 3 BELOW AVERAGE | 4 ABOUT AVERAGE | 5 SLIGHTLY ABOVE AVERAGE | 6 ABOUT AVERAGE | 7 SLIGHTLY ABOVE AVERAGE | 8 ABOUT AVERAGE | 9 BELOW AVERAGE | 10 VERY SMALL AMOUNT |
| 214. Approve aircraft operations in airport traffic areas (ATAs) | | | | | | | | | | |
| 215. Approve aircraft operations in control zones (CZs) | | | | | | | | | | |
| 216. Approve aircraft operations in terminal control areas (TCAs) | | | | | | | | | | |
| 217. Approve or coordinate aerial refueling operations | | | | | | | | | | |
| 218. Approve or coordinate aircraft operations in warning or restricted areas | | | | | | | | | | |
| 219. Approve or coordinate enroute altitude reservations | | | | | | | | | | |
| 220. Approve or coordinate IFR aircraft departures | | | | | | | | | | |
| 221. Approve or coordinate pilot requests for deviations from ATC clearances | | | | | | | | | | |
| 222. Approve or coordinate special visual flight rules (SVFR) operations | | | | | | | | | | |
| 223. Approve or disapprove flight join-ups | | | | | | | | | | |
| 224. Approve parachute, drop zone, or airdrop operations | | | | | | | | | | |
| 225. Approve pilot and supervisor of flying (SOF) communications interruptions | | | | | | | | | | |
| 226. Approve pilots' request to conduct unusual maneuvers | | | | | | | | | | |
| 227. Assign frequencies to aircraft | | | | | | | | | | |
| 228. Assign transponder modes or codes | | | | | | | | | | |
| 229. Authorize or control circling maneuvers | | | | | | | | | | |
| 230. Calculate lowest usable flight levels | | | | | | | | | | |
| 231. Clean work areas or equipment | | | | | | | | | | |
| 232. Complete preduty equipment checklists | | | | | | | | | | |
| 233. Conduct alternate facility procedures | | | | | | | | | | |
| 234. Conduct briefings on ATC equipment | | | | | | | | | | |
| 235. Conduct briefings on ATC operations | | | | | | | | | | |
| 236. Conduct communication-out procedures | | | | | | | | | | |
| 237. Conduct procedures for opening or closing runways | | | | | | | | | | |
| 238. Confirm aircraft altitudes | | | | | | | | | | |
| 239. Control aircraft with hot gun or hung ordnance | | | | | | | | | | |
| 240. Control no-radio (NORDO) aircraft | | | | | | | | | | |
| 241. Control practice precautionary approaches | | | | | | | | | | |
| 242. Control receiver-only aircraft | | | | | | | | | | |
| 243. Coordinate aircraft handoffs | | | | | | | | | | |
| 244. Coordinate allied altitude reservation requests | | | | | | | | | | |
| 245. Coordinate altitude reservation conflicts | | | | | | | | | | |
| 246. Coordinate hazardous cargo operations | | | | | | | | | | |
| 247. Coordinate or control aircraft surge launch and recovery (ASLAR) operations | | | | | | | | | | |
| 248. Coordinate or control priority missions | | | | | | | | | | |
| 249. Coordinate or control special tactical missions | | | | | | | | | | |
| 250. Coordinate or relay SOF requests | | | | | | | | | | |
| 251. Coordinate search and rescue operations | | | | | | | | | | |
| 252. Coordinate status of ATC facilities with other agencies | | | | | | | | | | |
| 253. Coordinate use of airspace with other agencies or facilities | | | | | | | | | | |
| 254. Coordinate video map alignments | | | | | | | | | | |
| 255. Copy or issue airfield advisories | | | | | | | | | | |
| 256. Copy or issue field operating conditions | | | | | | | | | | |
| 257. Copy or issue meteorological aviation report (METAR) weather reports | | | | | | | | | | |
| 258. Copy or relay standard weather observations | | | | | | | | | | |
| 259. Copy or transmit enroute clearances using FAA or International Civil Aviation Organization (ICAO) procedures | | | | | | | | | | |
| 260. Copy or transmit enroute clearances using host-nation agreement procedures | | | | | | | | | | |

DUTY-TASK SECTION

1. CHECK tasks you perform now.
2. If you DON'T do it, DON'T check it.
3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.

| | TIME SPENT IN PRESENT JOB | | | | | | | | | |
|--|------------------------------|-------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | | | |
| | 1 VERY SMALL AMOUNT | 2 SMALL AMOUNT | 3 MODERATE AMOUNT | 4 MODERATE AMOUNT | 5 MODERATE AMOUNT | 6 MODERATE AMOUNT | 7 MODERATE AMOUNT | 8 MODERATE AMOUNT | 9 MODERATE AMOUNT | 10 MODERATE AMOUNT |
| 261. Determine aircraft positions using nonradar procedures | | | | | | | | | | |
| 262. Direct or vector aircraft to external store jettison areas | | | | | | | | | | |
| 263. Direct or vector aircraft to fuel dumping areas | | | | | | | | | | |
| 264. Direct or vector emergency aircraft to alternate airports | | | | | | | | | | |
| 265. Erect or tear down TRN-41 mobile tactical air navigation systems (TACANs) | | | | | | | | | | |
| 266. Extract information from transmitted flight plans | | | | | | | | | | |
| 267. File flight progress strips | | | | | | | | | | |
| 268. Formulate IFR clearances | | | | | | | | | | |
| 269. Hold arriving VFR aircraft at visual fixes | | | | | | | | | | |
| 270. Inform agencies of observed unusual events or incidents | | | | | | | | | | |
| 271. Initiate antihijacking procedures | | | | | | | | | | |
| 272. Initiate emergency assistance procedures | | | | | | | | | | |
| 273. Initiate emergency handling procedures for special operations | | | | | | | | | | |
| 274. Initiate requests for control of airspace from other facilities | | | | | | | | | | |
| 275. Initiate special control actions for communist aircraft flights | | | | | | | | | | |
| 276. Issue advance approach information to arriving aircraft | | | | | | | | | | |
| 277. Issue aircraft in-flight fuel dumping advisories | | | | | | | | | | |
| 278. Issue aircraft speed adjustments | | | | | | | | | | |
| 279. Issue alternate clearances | | | | | | | | | | |
| 280. Issue altimeter settings | | | | | | | | | | |
| 281. Issue altitude assignments | | | | | | | | | | |
| 282. Issue bird advisories | | | | | | | | | | |
| 283. Issue clearance void times | | | | | | | | | | |
| 284. Issue go-around instructions | | | | | | | | | | |
| 285. Issue IFR holding instructions | | | | | | | | | | |
| 286. Issue low-altitude alerts | | | | | | | | | | |
| 287. Issue missed approach instructions | | | | | | | | | | |
| 288. Issue traffic advisories | | | | | | | | | | |
| 289. Issue wake turbulence advisories | | | | | | | | | | |
| 290. Issue warning area advisories | | | | | | | | | | |
| 291. Issue weather advisories | | | | | | | | | | |
| 292. Issue wheels down advisories | | | | | | | | | | |
| 293. Issue wind advisories | | | | | | | | | | |
| 294. Make time checks | | | | | | | | | | |
| 295. Monitor assigned frequencies | | | | | | | | | | |
| 296. Notify agencies of runways in use | | | | | | | | | | |
| 297. Operate generators | | | | | | | | | | |
| 298. Operate landlines | | | | | | | | | | |
| 299. Operate or check remote status indicators | | | | | | | | | | |
| 300. Operate or check time announcers | | | | | | | | | | |
| 301. Operate or check voice recorders | | | | | | | | | | |
| 302. Operationally check automatic terminal information services (ATIS) | | | | | | | | | | |
| 303. Participate in preduty familiarization briefings | | | | | | | | | | |
| 304. Participate in simulated crash, alert, or disaster control exercises | | | | | | | | | | |
| 305. Perform interfacility coordinations | | | | | | | | | | |
| 306. Perform intrafacility coordinations | | | | | | | | | | |
| 307. Perform meaconing, interference, jamming, and intrusion (MIJI) procedures | | | | | | | | | | |
| 308. Perform radar beacon checks | | | | | | | | | | |

DUTY-TASK SECTION

| | TIME SPENT IN PRESENT JOB | | | | | | | |
|--|------------------------------|-----------------|------------------|------------|---------------------------|------------------|----------------------|-------------|
| | CHECK (✓) IF DONE NOW | | | | | | | |
| | 1. VERY SMALL AMOUNT | 2. SMALL AMOUNT | 3. BELOW AVERAGE | 4. AVERAGE | 5. SLIGHTLY ABOVE AVERAGE | 6. ABOVE AVERAGE | 7. VERY LARGE AMOUNT | 8. NOT DONE |
| 1. CHECK tasks you perform now. | | | | | | | | |
| 2. If you DON'T do it, DON'T check it. | | | | | | | | |
| 3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it. | | | | | | | | |
| 309. Plot altitude reservations | | | | | | | | |
| 310. Practice facility evacuation procedures | | | | | | | | |
| 311. Practice security control of air traffic and air navigation aid (SCATANA) procedures | | | | | | | | |
| 312. Prepare altitude reservation requests | | | | | | | | |
| 313. Prepare ATIS messages for transmissions | | | | | | | | |
| 314. Prepare video maps | | | | | | | | |
| 315. Process airspace reservation amendment delays or cancellations | | | | | | | | |
| 316. Process ATCALS decommissioning messages | | | | | | | | |
| 317. Provide or coordinate special controls for air defense intercept missions | | | | | | | | |
| 318. Provide special handling for aircraft NAVAID flight inspections | | | | | | | | |
| 319. Provide special handling for special operations aircraft | | | | | | | | |
| 320. Provide special handling for very important persons (VIPs) or coded aircraft | | | | | | | | |
| 321. Provide wake turbulence separations | | | | | | | | |
| 322. Receive or relay enroute air traffic movement information | | | | | | | | |
| 323. Regulate flow of traffic between sectors or facilities | | | | | | | | |
| 324. Relay aircraft arrival or departure times | | | | | | | | |
| 325. Relay aircraft emergency instruction file information | | | | | | | | |
| 326. Relay aircraft messages | | | | | | | | |
| 327. Relay aircraft movement information | | | | | | | | |
| 328. Relay arresting system information | | | | | | | | |
| 329. Relay braking action reports | | | | | | | | |
| 330. Relay communications instructions for reports of vital intelligence sightings (CIRVIS) | | | | | | | | |
| 331. Relay IFR clearances | | | | | | | | |
| 332. Relay information for issuance of notices to airmen (NOTAMS) | | | | | | | | |
| 333. Relay information from FLIP | | | | | | | | |
| 334. Relay notices of overdue aircraft | | | | | | | | |
| 335. Relay notifications of ground missile emergencies | | | | | | | | |
| 336. Relay runway condition readings (RCRs) | | | | | | | | |
| 337. Relay runway visibility value (RVV) readings | | | | | | | | |
| 338. Relay runway visual range (RVR) readings | | | | | | | | |
| 339. Replace voice recorder tapes | | | | | | | | |
| 340. Request aircraft position information | | | | | | | | |
| 341. Request ATCALS flight checks | | | | | | | | |
| 342. Request or relay clearances for landings using light or voice systems | | | | | | | | |
| 343. Request pilot reported (PIREP) in-flight weather conditions | | | | | | | | |
| 344. Reroute aircraft around military operations areas (MOAs) | | | | | | | | |
| 345. Transfer arriving or departing aircraft to other facilities | | | | | | | | |
| 346. Update flight data on automated data systems | | | | | | | | |
| 347. Vector aircraft | | | | | | | | |
| 348. Verify altimeter settings | | | | | | | | |
| G. PERFORMING RADAR FUNCTIONS | | | | | | | | |
| 349. Apply final approach course intercept procedures | | | | | | | | |
| 350. Apply merging target procedures | | | | | | | | |
| 351. Apply no-gyro procedures | | | | | | | | |

DUTY-TASK SECTION

| <p>1. CHECK tasks you perform now.</p> <p>2. If you DON'T do it, DON'T check it.</p> <p>3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.</p> | TIME SPENT IN PRESENT JOB | | | | | | | | | |
|--|------------------------------|------------------|------------|------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | | | |
| | 1. VERY SMALL AMOUNT | 2. BELOW AVERAGE | 3. AVERAGE | 4. ABOVE AVERAGE | 5. VERY LARGE AMOUNT | 6. VERY LARGE AMOUNT | 7. VERY LARGE AMOUNT | 8. VERY LARGE AMOUNT | 9. VERY LARGE AMOUNT | 10. VERY LARGE AMOUNT |
| 352. Apply radar contact lost procedures | | | | | | | | | | |
| 353. Approve or issue radar pointouts | | | | | | | | | | |
| 354. Authorize visual separations between IFR arrivals or departures | | | | | | | | | | |
| 355. Conduct military training route (MTR) operations | | | | | | | | | | |
| 356. Confirm aircraft identifications | | | | | | | | | | |
| 357. Construct voice imprint files on personal computer (PC) radar simulators | | | | | | | | | | |
| 358. Control air traffic using oceanic procedures | | | | | | | | | | |
| 359. Control airport surveillance radar approaches (ASRs) | | | | | | | | | | |
| 360. Control instrument approaches | | | | | | | | | | |
| 361. Control precision radar approaches (PARs) | | | | | | | | | | |
| 362. Control timed approaches | | | | | | | | | | |
| 363. Coordinate aircraft movement and identification information with air defense facilities | | | | | | | | | | |
| 364. Coordinate aircraft position with tower or runway supervisory units (RSUs) | | | | | | | | | | |
| 365. Coordinate and relay observed radar weather with other agencies | | | | | | | | | | |
| 366. Coordinate approach or landing sequences | | | | | | | | | | |
| 367. Forward airport lighting requests to control towers | | | | | | | | | | |
| 368. Identify aircraft using beacon methods | | | | | | | | | | |
| 369. Identify aircraft using primary radar methods | | | | | | | | | | |
| 370. Implement air defense identification zone (ADIZ) procedures | | | | | | | | | | |
| 371. Inform aircraft of radar identification status | | | | | | | | | | |
| 372. Initiate PC radar simulator sessions | | | | | | | | | | |
| 373. Initiate special radar actions during electronic combat activities | | | | | | | | | | |
| 374. Initiate T-4 radar simulator sessions | | | | | | | | | | |
| 375. Interpret radar beacon displays | | | | | | | | | | |
| 376. Issue approach clearances | | | | | | | | | | |
| 377. Issue climbout instructions | | | | | | | | | | |
| 378. Issue decision height (DH) advisories | | | | | | | | | | |
| 379. Issue entry or exit clearances to special use airspace | | | | | | | | | | |
| 380. Issue minimum descent altitude (MDA) advisories | | | | | | | | | | |
| 381. Issue radar surveillance approach recommended altitudes | | | | | | | | | | |
| 382. Monitor special use airspace | | | | | | | | | | |
| 383. Operate pseudopilot consoles | | | | | | | | | | |
| 384. Operate special circuits | | | | | | | | | | |
| 385. Operationally check or adjust decision height lines on radar indicators | | | | | | | | | | |
| 386. Operationally check or adjust equipment alignment voltages | | | | | | | | | | |
| 387. Operationally check or adjust remote line amplifiers (RLAs) | | | | | | | | | | |
| 388. Operationally check primary radars | | | | | | | | | | |
| 389. Operationally check radar antenna tilt meters | | | | | | | | | | |
| 390. Operationally check radar reflector displays | | | | | | | | | | |
| 391. Operationally check secondary radars | | | | | | | | | | |
| 392. Perform map overlay adjustments | | | | | | | | | | |
| 393. Perform radar equipment turnaround procedures | | | | | | | | | | |
| 394. Perform radar handoffs | | | | | | | | | | |
| 395. Program scenarios for PC radar simulators | | | | | | | | | | |
| 396. Program T-4 radar simulator tapes | | | | | | | | | | |
| 397. Provide radar advisories to VFR aircraft | | | | | | | | | | |
| 398. Provide radar assistance to emergency aircraft | | | | | | | | | | |

DUTY-TASK SECTION

| <p>1. CHECK tasks you perform now.</p> <p>2. If you DON'T do it, DON'T check it.</p> <p>3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.</p> | TIME SPENT IN PRESENT JOB | | | | | | | |
|--|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | |
| | 1. VERY SMALL AMOUNT | 2. BELOW AVERAGE | 3. AVERAGE | 4. ABOVE AVERAGE | 5. VERY LARGE | 6. NOT APPLICABLE | 7. NOT APPLICABLE | 8. NOT APPLICABLE |
| 399. Provide radar monitoring of instrument approaches | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 400. Provide radar separation procedures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 401. Provide radar service for arrivals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 402. Provide radar service for departures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 403. Provide stage radar services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 404. Recognize or report radar malfunctions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 405. Relay enroute aircraft position estimates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 406. Select radar beacon presentations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 407. Track or flight-follow unmanned, suspect, or derelict airborne objects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| H. PERFORMING CONTROL TOWER FUNCTIONS | | | | | | | | |
| 408. Activate emergency evacuation alarm systems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 409. Activate primary crash alarm systems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 410. Adjust brite radar systems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 411. Advise pilots of observed abnormal aircraft conditions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 412. Apply reduced runway separation criteria | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 413. Apply terminal separation procedures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 414. Approve clearance for aircraft or vehicle operations in NAVAID critical areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 415. Assign runways for landings or takeoffs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 416. Authorize intersection takeoffs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 417. Authorize operations in visual blind spots | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 418. Authorize simultaneous opposite direction operations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 419. Authorize simultaneous same direction operations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 420. Authorize VFR departures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 421. Clear movement areas for emergency vehicle operations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 422. Control aircraft using light gun signals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 423. Control helicopter operations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 424. Control simulated flameout (SFO) approaches | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 425. Control taxiing aircraft | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 426. Control vehicles, equipment, or personnel on movement areas using radios or light gun signals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 427. Coordinate aircraft maintenance engine runups | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 428. Coordinate or conduct hydrazine procedures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 429. Coordinate runway changes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 430. Establish landing sequences | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 431. Issue takeoff or landing clearances | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 432. Maintain surveillance of airport movement or traffic areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 433. Make or relay limited weather observations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 434. Operate aircraft arresting systems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 435. Operate vehicle traffic control signals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 436. Perform departure control overrides | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 437. Plot or relay positions on crash grid maps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 438. Request aircraft releases from departure control | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 439. Select appropriate wind sensors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 440. Support minimum interval takeoff operations (MITOs) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 441. Verify proper arresting system configurations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

- | TIME SPENT
IN PRESENT JOB | |
|------------------------------|---------------------------|
| 1. VERY SMALL AMOUNT | 9. VERY LARGE AMOUNT |
| 2. MUCH SMALLER AMOUNT | 8. MUCH MORE AMOUNT |
| 3. BELOW AVERAGE | 7. ABOVE AVERAGE |
| 4. SLIGHTLY BELOW AVERAGE | 6. SLIGHTLY ABOVE AVERAGE |
| 5. ABOUT AVERAGE | 5. ABOUT AVERAGE |
- CHECK (✓) IF DONE NOW

[illegible][illegible]

DUTY-TASK SECTION

| <p>1. CHECK tasks you perform now.</p> <p>2. If you DON'T do it, DON'T check it.</p> <p>3. In the "time spent" column RATE all checked tasks on time spent in present job. If you CHECKED it, RATE it.</p> | TIME SPENT IN PRESENT JOB | | | | | | | |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------|
| | CHECK (✓) IF DONE NOW | | | | | | | |
| | 1. VERY SMALL AMOUNT | 2. BELOW AVERAGE | 3. AVERAGE | 4. ABOVE AVERAGE | 5. VERY LARGE AMOUNT | 6. VERY LARGE AMOUNT | 7. VERY LARGE AMOUNT | 8. VERY LARGE AMOUNT |
| 484. Conduct in-house tests for automated ATC systems software | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 485. Conduct or analyze feasibility studies to determine hardware or software needs to support automated ATC systems | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 486. Conduct tests for enroute automated radar tracking system (EARTS) software | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 487. Configure automated ATC systems hardware for operational needs | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 488. Configure EARTS hardware systems for operational needs | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 489. Document and record data for computer programs | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 490. Interpret system performance for air traffic controllers | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 491. Maintain data bases for automated ATC systems | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 492. Maintain data bases for EARTS | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 493. Perform systems analysis to resolve software problems | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 494. Program and assign peripheral devices in data processing subsystems | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 495. Program digitized ATC geographic maps | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 496. Program source codes for software maintenance or operational programs of automated ATC systems | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 497. Program ULTRA-30 language code for software maintenance or operational programs of EARTS mainframe | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 498. Provide joint service or interdepartmental support for automated ATC systems implementations | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 499. Submit recommendations to FAA for software changes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 500. Sustain EARTS software to meet FAA National Air Space Configuration Management software requirements | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 501. Test software for related computer interfaces | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 502. Validate automated ATC systems software modifications | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 503. Validate EARTS software modifications | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| <p>RETURN TO THE INSTRUCTIONS FOR COMPLETING THE DUTY-TASK SECTION AND FOLLOW "PROCEDURE B"</p> | | | | | | | | |

**APPENDIX G: HIGH PERCENT TIME SPENT (PTS) TASKS WITH TASK FACTOR
RANK ORDERS**

- 1) Paygrade Personnel
- 2) Skill Level Personnel
- 3) TAFMS Personnel
- 4) TICF Personnel

**Rank Order of Task Factor Ratings for 25 Tasks Personnel Spend the Greatest Amount
of Time Performing by Paygrade**

| E-7/8/9 TASKS | RANK ORDER | | | E-4/5/6 TASKS | RANK ORDER | | | E-1/2/3 TASKS | RANK ORDER | | |
|------------------|------------|-----|-----|------------------|------------|-----|---------|------------------|------------|-----|-----|
| | TD | TLD | TPD | | TD | TLD | TP D | | TD | TLD | TPD |
| B 96 | 197 | 279 | 237 | F298 | 490 | 486 | 494 | F298 | 490 | 486 | 494 |
| B 54 | 116 | 213 | 160 | F295 | 500 | 501 | 502 | F295 | 500 | 501 | 502 |
| A 11 | 234 | 295 | 272 | F305 | 405 | 374 | 419 | F231 | 498 | 502 | 498 |
| C132 | 53 | 65 | 46 | F306 | 500 | 501 | 502 | F305 | 405 | 374 | 419 |
| C107 | 28 | 92 | 72 | F208 | 398 | 437 | 454 | F306 | 393 | 388 | 415 |
| B 88 | 38 | 203 | 142 | F280 | 499 | 496 | 496 | F208 | 398 | 437 | 454 |
| B 73 | 176 | 207 | 169 | F288 | 499 | 496 | 496 | F280 | 499 | 496 | 496 |
| C133 | 32 | 64 | 51 | F227 | 491 | 465 | 489 | F227 | 491 | 465 | 489 |
| B 72 | 200 | 202 | 111 | F303 | 491 | 465 | 489 | F288 | 381 | 358 | 403 |
| A 20 | 82 | 95 | 79 | F220 | 484 | 476 | 483 | F228 | 494 | 466 | 487 |
| B 86 | 50 | 118 | 82 | F232 | 484 | 476 | 483 | F220 | 331 | 280 | 328 |
| C115 | 93 | 103 | 108 | F267 | 502 | 495 | 501 | F232 | 484 | 476 | 483 |
| C105 | 39 | 87 | 123 | F228 | 494 | 466 | 487 | F303 | 489 | 487 | 482 |
| C120 | 149 | 195 | 130 | F331 | 350 | 369 | 418 | F331 | 350 | 369 | 418 |
| C119 | 96 | 227 | 122 | F293 | 493 | 488 | 486 | F267 | 502 | 495 | 501 |
| C135 | 17 | 52 | 33 | F231 | 498 | 502 | 498 | F212 | 312 | 247 | 317 |
| F306 | 393 | 388 | 415 | F292 | 498 | 502 | 498 | F293 | 493 | 488 | 486 |
| C101 | 37 | 117 | 117 | F212 | 498 | 502 | 498 | F281 | 466 | 454 | 465 |
| F298 | 490 | 486 | 494 | F281 | 466 | 454 | 465 | F292 | 497 | 490 | 493 |
| F305 | 405 | 374 | 419 | F345 | 402 | 299 | 284 | F345 | 420 | 441 | 466 |
| F295 | 500 | 501 | 502 | F291 | 428 | 442 | 436 | F243 | 360 | 372 | 389 |
| A 21 | 177 | 215 | 199 | F255 | 461 | 459 | 457 | F324 | 488 | 491 | 484 |
| C108 | 56 | 144 | 167 | F258 | 472 | 446 | 450 | F296 | 501 | 498 | 503 |
| A 1 | 479 | 493 | 481 | F296 | 501 | 498 | 503 | F258 | 472 | 446 | 450 |
| A 14 | 151 | 93 | 119 | F321 | 185 | 252 | 280 | F289 | 426 | 433 | 438 |

Rank Order of Task Factor Ratings for 25 Tasks Experienced Personnel Spend the
Greatest Amount of Time Performing

| 27270 | RANK ORDER | | | 27290 | RANK ORDER | | | 27200 | RANK ORDER | | |
|-------|------------|-----|-----|-------|------------|-----|-----|-------|------------|-----|-----|
| TASK | TD | TLD | TPD | TASK | TD | TLD | TPD | TASK | TD | TLD | TPD |
| F298 | 190 | 486 | 494 | B 96 | 197 | 279 | 237 | B 96 | 197 | 279 | 237 |
| F305 | 405 | 374 | 419 | C135 | 17 | 52 | 33 | C135 | 17 | 52 | 33 |
| B 86 | 50 | 118 | 82 | A 21 | 177 | 215 | 199 | A 20 | 82 | 95 | 79 |
| F306 | 393 | 388 | 415 | A11 | 234 | 295 | 272 | B 71 | 347 | 353 | 309 |
| F295 | 500 | 501 | 502 | C132 | 53 | 65 | 46 | C101 | 37 | 117 | 117 |
| F303 | 489 | 487 | 482 | B 54 | 116 | 213 | 160 | B 73 | 176 | 207 | 169 |
| B 96 | 197 | 279 | 237 | A 10 | 137 | 99 | 107 | B 72 | 200 | 202 | 111 |
| F288 | 381 | 358 | 403 | C133 | 32 | 64 | 51 | C107 | 28 | 92 | 72 |
| F208 | 398 | 437 | 454 | A 34 | 365 | 378 | 321 | C132 | 53 | 65 | 46 |
| F280 | 499 | 496 | 496 | C119 | 96 | 227 | 122 | E205 | 276 | 132 | 220 |
| F227 | 491 | 465 | 489 | C120 | 149 | 195 | 130 | C133 | 32 | 64 | 51 |
| F220 | 331 | 280 | 328 | A 20 | 82 | 95 | 79 | A 26 | 363 | 361 | 262 |
| F293 | 493 | 488 | 486 | A 14 | 151 | 93 | 119 | C105 | 39 | 87 | 123 |
| F292 | 497 | 490 | 493 | C115 | 93 | 103 | 108 | C108 | 56 | 144 | 167 |
| F232 | 484 | 476 | 483 | C126 | 311 | 363 | 230 | A 38 | 48 | 158 | 138 |
| F212 | 312 | 247 | 317 | B 88 | 38 | 203 | 142 | B 54 | 116 | 213 | 160 |
| F228 | 494 | 466 | 487 | A 27 | 259 | 286 | 221 | A 44 | 430 | 469 | 406 |
| C132 | 53 | 65 | 46 | B 86 | 50 | 118 | 82 | A43 | 408 | 468 | 409 |
| F345 | 420 | 441 | 466 | C107 | 28 | 92 | 72 | E200 | 65 | 102 | 109 |
| H432 | 341 | 384 | 353 | B 72 | 200 | 202 | 111 | I443 | 192 | 74 | 124 |
| F291 | 428 | 442 | 436 | B 73 | 176 | 207 | 169 | F235 | 375 | 419 | 416 |
| A 2 | 429 | 479 | 758 | A 46 | 453 | 439 | 413 | A 11 | 234 | 295 | 272 |
| F267 | 502 | 495 | 501 | C105 | 39 | 87 | 123 | B 88 | 38 | 203 | 142 |
| F281 | 466 | 454 | 465 | A 38 | 48 | 158 | 138 | C115 | 93 | 103 | 108 |
| F321 | 185 | 252 | 280 | E188 | 84 | 51 | 76 | C120 | 149 | 195 | 130 |

Rank Order of Task Factor Ratings for 25 Tasks Senior Air Force Personnel (TAFMS)
Spend the Greatest Amount of Time Performing

| 97+ | RANK ORDER | | | 241+ | RANK ORDER | | |
|-------|------------|-----|-----|-------|------------|-----|-----|
| TASKS | TD | TLD | TPD | TASKS | TD | TLD | TPD |
| F298 | 490 | 486 | 494 | B 96 | 197 | 279 | 237 |
| F306 | 393 | 388 | 415 | C135 | 17 | 52 | 33 |
| F305 | 405 | 374 | 419 | A 20 | 82 | 95 | 79 |
| F295 | 500 | 501 | 502 | C101 | 37 | 117 | 117 |
| F288 | 381 | 358 | 403 | B 73 | 176 | 207 | 169 |
| F303 | 489 | 487 | 482 | A 11 | 234 | 295 | 272 |
| B 86 | 50 | 118 | 82 | B 72 | 200 | 202 | 111 |
| F280 | 499 | 496 | 496 | B 71 | 347 | 353 | 309 |
| F208 | 398 | 437 | 454 | C107 | 28 | 92 | 72 |
| F227 | 491 | 465 | 489 | B 54 | 116 | 213 | 160 |
| F220 | 331 | 280 | 328 | C132 | 53 | 65 | 46 |
| F232 | 484 | 476 | 483 | C105 | 39 | 87 | 123 |
| B 96 | 197 | 279 | 237 | B 88 | 38 | 203 | 142 |
| F293 | 493 | 488 | 486 | C133 | 32 | 64 | 51 |
| F228 | 494 | 466 | 487 | B 81 | 2 | 14 | 42 |
| F292 | 497 | 490 | 493 | B 83 | 107 | 165 | 268 |
| F212 | 312 | 247 | 317 | A 14 | 151 | 93 | 119 |
| F281 | 466 | 454 | 465 | C119 | 96 | 227 | 122 |
| F267 | 502 | 495 | 501 | C115 | 93 | 103 | 108 |
| F291 | 428 | 442 | 436 | C108 | 56 | 144 | 167 |
| F345 | 420 | 441 | 466 | C120 | 149 | 195 | 130 |
| F331 | 350 | 369 | 418 | A 21 | 177 | 215 | 199 |
| B 54 | 116 | 213 | 160 | A 38 | 48 | 158 | 138 |
| F255 | 461 | 459 | 457 | A 34 | 365 | 378 | 321 |
| F321 | 185 | 252 | 280 | A 26 | 363 | 361 | 262 |

**Rank Order of Task Factor Ratings for 25 Tasks Senior Career Field (TICF) Personnel
Spend the Greatest Amount of Time Performing**

| 97+ TASKS | RANK ORDER | | |
|--------------|------------|-----|-----|
| | TD | TLD | TPD |
| F298 | 190 | 486 | 494 |
| B 96 | 197 | 279 | 237 |
| F306 | 393 | 388 | 415 |
| F295 | 500 | 501 | 502 |
| F305 | 405 | 374 | 419 |
| B 86 | 50 | 118 | 82 |
| F288 | 381 | 358 | 403 |
| F303 | 489 | 487 | 482 |
| F208 | 398 | 437 | 454 |
| F280 | 499 | 496 | 496 |
| F227 | 491 | 465 | 489 |
| F220 | 331 | 280 | 328 |
| F232 | 484 | 476 | 483 |
| F293 | 493 | 488 | 486 |
| F228 | 494 | 466 | 487 |
| F212 | 312 | 247 | 317 |
| F292 | 497 | 490 | 493 |
| F281 | 466 | 454 | 465 |
| C132 | 53 | 65 | 46 |
| B 54 | 75 | 30 | 60 |
| F291 | 428 | 442 | 436 |
| F267 | 502 | 495 | 501 |
| F345 | 420 | 441 | 466 |
| A 2 | 429 | 479 | 458 |
| F331 | 350 | 369 | 418 |

**APPENDIX H: HIGH PERCENT MEMBERS PERFORMING (PMP) TASKS WITH TASK
FACTOR RANK ORDERS**

- 1) Paygrade Personnel
- 2) Skill Level Personnel
- 3) TAFMS Personnel
- 4) TICF Personnel

Rank Order of Task Factor Ratings for 25 Tasks Performed by the Greatest Percentage
of Paygrade Personnel

| E-7/8/9 | | | | | E-4/5/6 | | | | | E-1/2/3 | | | | |
|------------|------|-----|-----|-----|------------|------|-----|-----|-----|------------|------|-----|-----|-----|
| RANK ORDER | | | | | RANK ORDER | | | | | RANK ORDER | | | | |
| PMP | TASK | TD | TLD | TPD | PMP | TASK | TD | TLD | TPD | PMP | TASK | TD | TLD | TPD |
| 75 | F306 | 393 | 388 | 415 | 91 | F298 | 190 | 486 | 494 | 97 | F298 | 190 | 486 | 494 |
| 74 | B 54 | 116 | 213 | 160 | 91 | F305 | 405 | 374 | 419 | 94 | F305 | 405 | 374 | 419 |
| 74 | F305 | 405 | 374 | 419 | 91 | F280 | 499 | 496 | 496 | 93 | F231 | 498 | 502 | 498 |
| 73 | B 96 | 197 | 279 | 237 | 91 | F306 | 393 | 388 | 415 | 93 | F288 | 381 | 358 | 403 |
| 73 | F298 | 490 | 486 | 494 | 90 | F288 | 381 | 358 | 403 | 92 | F306 | 393 | 388 | 415 |
| 72 | F288 | 381 | 358 | 403 | 89 | F227 | 491 | 465 | 489 | 92 | F280 | 499 | 496 | 496 |
| 72 | F227 | 491 | 465 | 489 | 89 | F295 | 500 | 501 | 502 | 92 | F295 | 500 | 501 | 502 |
| 72 | F280 | 499 | 496 | 496 | 88 | F291 | 428 | 442 | 436 | 90 | F227 | 491 | 465 | 489 |
| 71 | F295 | 500 | 501 | 502 | 86 | F293 | 493 | 488 | 486 | 89 | F208 | 398 | 437 | 454 |
| 71 | F303 | 489 | 487 | 482 | 86 | F348 | 482 | 484 | 492 | 89 | F348 | 482 | 484 | 492 |
| 71 | C133 | 32 | 64 | 51 | 86 | F303 | 489 | 487 | 482 | 88 | F293 | 493 | 488 | 486 |
| 70 | C132 | 53 | 65 | 46 | 85 | F208 | 398 | 437 | 454 | 88 | F228 | 494 | 466 | 487 |
| 70 | F291 | 428 | 442 | 436 | 85 | F282 | 474 | 475 | 471 | 88 | F282 | 474 | 475 | 471 |
| 69 | F228 | 494 | 466 | 487 | 85 | F331 | 350 | 369 | 418 | 87 | F291 | 428 | 442 | 436 |
| 69 | F212 | 312 | 247 | 317 | 85 | F232 | 484 | 476 | 483 | 87 | F212 | 312 | 247 | 317 |
| 69 | F255 | 461 | 459 | 457 | 85 | F294 | 503 | 500 | 500 | 86 | F331 | 350 | 369 | 418 |
| 68 | F235 | 375 | 419 | 416 | 85 | F220 | 331 | 280 | 328 | 86 | F220 | 331 | 280 | 328 |
| 68 | F232 | 484 | 476 | 483 | 85 | F212 | 312 | 247 | 317 | 84 | F232 | 484 | 476 | 483 |
| 68 | F321 | 185 | 252 | 280 | 84 | F255 | 461 | 459 | 457 | 84 | F294 | 503 | 500 | 500 |
| 68 | F293 | 493 | 488 | 486 | 84 | F292 | 497 | 490 | 493 | 84 | F343 | 440 | 420 | 437 |
| 67 | F282 | 474 | 475 | 471 | 84 | F231 | 498 | 502 | 498 | 83 | F303 | 489 | 487 | 482 |
| 67 | F208 | 398 | 437 | 454 | 83 | F228 | 494 | 466 | 487 | 83 | F289 | 426 | 433 | 438 |
| 67 | F343 | 440 | 420 | 437 | 83 | F343 | 440 | 420 | 437 | 82 | F255 | 461 | 459 | 457 |
| 67 | F284 | 427 | 387 | 396 | 83 | F289 | 426 | 433 | 438 | 82 | F296 | 501 | 498 | 503 |
| 67 | F220 | 331 | 280 | 328 | 82 | F267 | 502 | 495 | 501 | 82 | F321 | 185 | 252 | 280 |

Rank Order of Task Factor Ratings for 25 Tasks Performed by the Greatest Percentage
of Experienced Skill Level Personnel

| 27270 RANK ORDER | | | | | 27290 RANK ORDER | | | | | 27200 RANK ORDER | | | | |
|------------------|------|-----|-----|-----|------------------|------|-----|-----|-----|------------------|------|-----|-----|-----|
| PMP | TASK | TD | TLD | TPD | PMP | TASK | TD | TLD | TPD | PMP | TASK | TD | TLD | TPD |
| 86 | F305 | 405 | 374 | 419 | 86 | C132 | 53 | 65 | 46 | 93 | B 96 | 197 | 279 | 237 |
| 85 | F306 | 393 | 388 | 415 | 84 | B 96 | 197 | 279 | 237 | 80 | E205 | 276 | 132 | 220 |
| 85 | F298 | 190 | 486 | 494 | 84 | A 21 | 177 | 215 | 199 | 80 | C133 | 32 | 64 | 51 |
| 85 | F288 | 381 | 358 | 403 | 84 | B 54 | 116 | 213 | 160 | 80 | B 54 | 116 | 213 | 160 |
| 84 | F280 | 499 | 496 | 496 | 84 | C133 | 32 | 64 | 51 | 80 | A44 | 430 | 469 | 406 |
| 83 | F303 | 489 | 487 | 482 | 84 | A 46 | 453 | 439 | 413 | 80 | A 1 | 479 | 793 | 481 |
| 83 | F227 | 491 | 465 | 489 | 81 | A 1 | 381 | 358 | 403 | 73 | A 20 | 82 | 95 | 79 |
| 81 | F295 | 500 | 501 | 502 | 78 | A 11 | 234 | 295 | 272 | 73 | C107 | 28 | 92 | 72 |
| 81 | F291 | 428 | 442 | 436 | 78 | C119 | 96 | 227 | 122 | 73 | C132 | 53 | 65 | 46 |
| 80 | F212 | 312 | 247 | 317 | 78 | A 20 | 82 | 95 | 79 | 73 | A 43 | 408 | 468 | 409 |
| 80 | F232 | 484 | 476 | 483 | 76 | C120 | 149 | 195 | 130 | 73 | A 11 | 234 | 295 | 272 |
| 79 | F293 | 493 | 488 | 486 | 76 | A 14 | 151 | 93 | 119 | 73 | A 34 | 365 | 378 | 321 |
| 79 | F208 | 398 | 437 | 454 | 76 | C115 | 93 | 103 | 108 | 67 | B 73 | 176 | 207 | 169 |
| 79 | F292 | 497 | 490 | 493 | 76 | B 88 | 38 | 203 | 142 | 67 | B 72 | 200 | 202 | 111 |
| 79 | F282 | 474 | 475 | 471 | 76 | A 27 | 259 | 286 | 221 | 67 | A 26 | 363 | 361 | 262 |
| 78 | F220 | 331 | 280 | 328 | 76 | E195 | 282 | 310 | 274 | 67 | C105 | 39 | 87 | 123 |
| 78 | F321 | 185 | 252 | 280 | 76 | B 77 | 486 | 494 | 491 | 67 | E200 | 65 | 102 | 109 |
| 78 | B 51 | 487 | 499 | 497 | 73 | A 10 | 137 | 99 | 107 | 67 | F235 | 375 | 419 | 416 |
| 78 | F255 | 461 | 459 | 457 | 73 | A 34 | 365 | 378 | 321 | 67 | B88 | 38 | 203 | 142 |
| 78 | F343 | 440 | 420 | 437 | 73 | C126 | 311 | 363 | 230 | 67 | B75 | 143 | 152 | 126 |
| 78 | F348 | 482 | 484 | 492 | 73 | C104 | 58 | 86 | 84 | 67 | E188 | 84 | 51 | 76 |
| 77 | F284 | 427 | 387 | 396 | 73 | A 3 | 495 | 503 | 499 | 67 | C104 | 58 | 86 | 84 |
| 77 | F228 | 494 | 466 | 487 | 73 | F306 | 393 | 388 | 415 | 67 | A 3 | 495 | 503 | 499 |
| 77 | F294 | 503 | 500 | 500 | 73 | F227 | 491 | 465 | 489 | 67 | A 10 | 137 | 99 | 107 |
| 75 | F289 | 426 | 433 | 438 | 73 | F288 | 381 | 358 | 403 | 67 | C131 | 4 | 8 | 19 |

**Rank Order of Task Factor Ratings for 25 Tasks Performed by the Greatest Percentage
of Experienced Air Force Personnel (TAFMS)**

| 97+ RANK ORDER | | | | | 241+ RANK ORDER | | | | |
|----------------|------|-----|-----|-----|-----------------|------|-----|-----|-----|
| PMP | TASK | TD | TLD | TPD | PMP | TASK | TD | TLD | TPD |
| 86 | F305 | 405 | 374 | 419 | 82 | B 96 | 197 | 279 | 237 |
| 86 | F306 | 393 | 388 | 415 | 75 | B 54 | 116 | 213 | 160 |
| 85 | F298 | 190 | 486 | 494 | 73 | C133 | 32 | 64 | 51 |
| 85 | F288 | 381 | 358 | 403 | 72 | C132 | 53 | 65 | 46 |
| 84 | F280 | 499 | 496 | 496 | 68 | B 88 | 38 | 203 | 142 |
| 84 | F227 | 491 | 465 | 489 | 68 | F235 | 375 | 419 | 416 |
| 83 | F295 | 500 | 501 | 502 | 68 | F288 | 381 | 358 | 403 |
| 83 | F303 | 489 | 487 | 482 | 68 | F306 | 393 | 388 | 415 |
| 82 | F291 | 428 | 442 | 436 | 68 | F227 | 491 | 465 | 489 |
| 80 | F293 | 493 | 488 | 486 | 67 | F305 | 405 | 374 | 419 |
| 80 | F232 | 484 | 476 | 483 | 67 | F280 | 499 | 496 | 496 |
| 79 | F208 | 398 | 437 | 454 | 65 | F298 | 190 | 486 | 494 |
| 79 | F212 | 312 | 247 | 317 | 65 | F282 | 474 | 475 | 471 |
| 79 | F282 | 474 | 475 | 471 | 63 | A11 | 234 | 295 | 272 |
| 79 | F220 | 331 | 280 | 328 | 63 | A21 | 177 | 215 | 199 |
| 79 | F348 | 482 | 484 | 492 | 63 | A 1 | 479 | 493 | 481 |
| 79 | F255 | 461 | 459 | 457 | 63 | F295 | 500 | 501 | 502 |
| 78 | F228 | 494 | 466 | 487 | 63 | F212 | 312 | 247 | 317 |
| 78 | F284 | 427 | 387 | 396 | 63 | F293 | 493 | 488 | 486 |
| 77 | F321 | 185 | 252 | 280 | 63 | F291 | 428 | 442 | 436 |
| 77 | F292 | 497 | 490 | 493 | 63 | F284 | 427 | 387 | 396 |
| 77 | F294 | 503 | 500 | 500 | 62 | B 73 | 176 | 207 | 169 |
| 77 | F343 | 440 | 420 | 437 | 62 | C119 | 96 | 227 | 122 |
| 77 | F331 | 350 | 369 | 418 | 62 | F321 | 185 | 252 | 280 |
| 76 | F289 | 426 | 433 | 438 | 62 | F232 | 484 | 476 | 483 |

**Rank Order of Task Factor Ratings for 25 Tasks Performed by the Greatest Percentage
of Senior Career Field (TICF) Personnel**

| 97 + | | RANK ORDER | | |
|------|-------|------------|-----|-----|
| PMP | TASKS | TD | TLD | TPD |
| 84 | F306 | 393 | 388 | 415 |
| 84 | F305 | 405 | 374 | 419 |
| 84 | F288 | 381 | 358 | 403 |
| 83 | F298 | 190 | 486 | 494 |
| 83 | F227 | 491 | 465 | 489 |
| 82 | F280 | 499 | 496 | 496 |
| 81 | F295 | 500 | 501 | 502 |
| 81 | F303 | 489 | 487 | 482 |
| 80 | F291 | 428 | 442 | 436 |
| 78 | F232 | 484 | 476 | 483 |
| 78 | F293 | 493 | 488 | 486 |
| 78 | F212 | 312 | 247 | 317 |
| 78 | F208 | 398 | 437 | 454 |
| 78 | F220 | 331 | 280 | 328 |
| 77 | F255 | 461 | 459 | 457 |
| 77 | F282 | 474 | 475 | 471 |
| 77 | F348 | 482 | 484 | 492 |
| 77 | F228 | 494 | 466 | 487 |
| 76 | F321 | 185 | 252 | 280 |
| 76 | B51 | 487 | 799 | 497 |
| 76 | F284 | 427 | 387 | 396 |
| 76 | F292 | 497 | 490 | 493 |
| 75 | F343 | 440 | 420 | 437 |
| 75 | F294 | 503 | 500 | 500 |
| 74 | F331 | 350 | 369 | 418 |

APPENDIX I: RANK ORDER OF FACTOR RATINGS OF TASKS RATED HIGH ON
TRAINING EMPHASIS AND PERFORMED BY GREATER THAN 50 PERCENT OF
FIRST JOB PERSONNEL

| TE M+SD* | 1st JOB | | RANK ORDER | | |
|-------------|---------|-------|------------|-----|-----|
| | PMP | TASKS | TD | TLD | TPD |
| 7.67 | 93 | F288 | 381 | 358 | 403 |
| 7.54 | 86 | F289 | 426 | 433 | 438 |
| 7.43 | 55 | F286 | 262 | 281 | 375 |
| 7.42 | 88 | F212 | 312 | 247 | 317 |
| 7.33 | 86 | F321 | 185 | 252 | 280 |
| 7.31 | 72 | F243 | 360 | 372 | 389 |
| 7.21 | 89 | F208 | 398 | 437 | 454 |
| 7.17 | 87 | F220 | 331 | 280 | 328 |
| 7.17 | 87 | F292 | 497 | 490 | 493 |
| 7.13 | 50 | F347 | 317 | 262 | 367 |
| 7.10 | 81 | F284 | 427 | 387 | 396 |
| 7.06 | 83 | F281 | 466 | 454 | 465 |
| 7.00 | 79 | F240 | 153 | 243 | 168 |
| 7.00 | 69 | F272 | 136 | 197 | 171 |
| 6.98 | 88 | F331 | 350 | 369 | 418 |
| 6.96 | 90 | F291 | 428 | 442 | 436 |
| 6.88 | 91 | F293 | 493 | 488 | 486 |
| 6.85 | 95 | F305 | 405 | 374 | 419 |
| 6.83 | 93 | F306 | 393 | 388 | 415 |
| 6.83 | 75 | F238 | 467 | 463 | 452 |
| 6.81 | 68 | F222 | 232 | 169 | 242 |
| 6.79 | 91 | F227 | 491 | 465 | 489 |
| 6.75 | 72 | F242 | 221 | 254 | 231 |
| 6.71 | 72 | F329 | 462 | 467 | 472 |
| 6.67 | 90 | F282 | 474 | 475 | 471 |

*3.22+2.27=5.49